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1. PURPOSE

THE 1800 RELOCATABLE DIAGNOSTIC LOADER IS USED TO LOAD THE DIAGNOSTIC
MONITOR AND PROGRAMS WHICH RUN UNDER CONTROL OF THE DIAGNOSTIC
MONITOR. THE LOADER ALSO LOADS NON-MONITOR PROGRAMS WHOSE OBJECT
DECKS ARE IN THE SAME FORM AS THE OUTPUT OF THE 1800 ASSEMBLER
(12-4 FORMAT). (THE 1800 RELOCATABLE DIAGNOSTIC LOADER WILL NOT
LOAD PROGRAMS WHOSE OBJECT DECK IS COMPATIBLE WITH EITHER THE 1800
BASIC DIAGNOSTIC LOADER OR THE 1800 AUXILIARY STORAGE LOADER.)

2. PREREQUISITES

    2.1   PROGRAM PREREQUISITES.

    PROGRAMS MAY NOT HAVE ORG ADDRESSES OF /3000 TO /75DD SINCE THIS
    IS RESERVED FOR WAITS AND ERROR TRAPS.

    2.2   EQUIPMENT PREREQUISITES

    A. 1801 OR 1802 PROCESSOR CONTROLER
    B. 1442 CARD READER/PUNCH

3. USE PROCEDURE

    3.1   LOADING AND OPERATING

    THE 1800 RELOCATABLE LOADER DECK CONSISTS OF SEVEN (8-8 FORMAT)
    CARDS. THE RELOCATABLE LOADER IS CAPABLE OF LOADING-

    1. ABSOLUTE BINARY DECKS (12-4 FORMAT)
    2. RELOCATABLE BINARY DECKS (WHOSE ORIGIN IS /07FF)
    3. ABSOLUTE HEX CORRECTION CARDS
    4. RELOCATABLE HEX CORRECTION CARDS
    5. ABSOLUTE HEX TRANSFER CARDS
    6. EDIT CARDS (OF THE TYPE REQUIRED FOR PROGRAMS WHICH RUN UNDER

CONTROL OF THE DIAGNOSTIC MONITORS)

TO LOAD A PROGRAM-

    A. AT 1442 CARD READ/PUNCH-

        1. DEPRESS NPRO PUSHBUTTON TO EJECT ANY CARDS LEFT IN MACHINE.
        2. PLACE 1800 RELOCATABLE LOADER IN FRONT OF DECK(S) TO BE
            LOADED AND PLACE CARDS IN HOPPER. PLACE CARDS FACE DOWN WITH
            NINE EDGE FORWARD.
        3. DEPRESS START PUSHBUTTON ON 1442. READY INDICATOR SHOULD
            LIGHT.

    B. USE 1800 PC CONSOLE TO CLEAR STORAGE AS FOLLOWS-

        1. SET DATA ENTRY SWITCHES TO /7DFF.
        2. SET CHECK STOP SWITCH TO 'OFF'.
        3. SET WRITE STG PRO SWITCH TO 'YES'.
        4. HOLD CLEAR STORAGE PUSHBUTTON DOWN AND DEPRESS START
            PUSHBUTTON TO CLEAR STORAGE.
        5. DEPRESS STOP PUSHBUTTON TO STOP CLEARING OPERATION.

    C. TO INITIATE PROGRAM LOADING-

        1. SET OPERATIONS MONITOR SWITCH TO 'OFF'.
        2. SET DISABLE INTERRUPT SWITCH TO 'OFF'.
        3. SET CHECK STOP SWITCH TO 'ON'.
        4. SET WRITE STOR PROT BITS SWITCH TO 'YES'.
        5. SET 1800 PC SENSE/PROGRAM AND DATA ENTRY SWITCHES AS REQUIRED
            BY PROGRAM TO BE LOADED.
        6. DEPRESS RESET PUSHBUTTON.
        7. DEPRESS PROGRAM LOAD PUSHBUTTON. (PROGRAM SHOULD LOAD)

    3.2   WAITS

    SEE THE WAIT SECTION OF THE LISTING FOR REGISTER VALUES AND WAIT
    DESCRIPTION.

4. PRINTOUTS (NONE)

5. COMMENTS

    5.1   THE FOLLOWING ARE THE MAJOR ELEMENTS OF THE 1800 RELOCATABLE

    DIAGNOSTIC LOADER-

    5.1.1 BOOTSTRAP ROUTINE-- IS A SET OF INSTRUCTIONS ENTERED INTO THE
           PROCESSOR CONTROLLED BY THE IPL (INITIAL PROGRAM LOADER) MODE WHOSE
           FUNCTION IS TO READ IN THE REMAINDER OF THE LOADER.

    5.1.2 READ ROUTINE -- CHECKS 1442 FOR PROPER STATUS, READS A CARD INTO
           LOCATION /0000 THROUGH /004F, CHECKS FOR SATISFACTORY COMPLETION OF
           THE READ OPERATION, AND DETERMINES WHETHER THE CARD READ IS A BINARY
           CARD OR A HEXADECIMAL (CORRECTION OR EDIT CARD).

    5.1.3 BINARY PACK ROUTINE -- TAKES DATA FOUND IN LOCATIONS /000D THROUGH
           /004F (12 BITS PER CORE WORD) AND PACKS IT INTO LOCATION /000D
           THROUGH /0035 (16 BITS PER CORE WORD).

    5.1.4 CHECKSUM ROUTINE -- COMPUTES CHECKSUM OF A BINARY CARD, WAITS IF
           CHECKSUM IS IN ERROR.

    5.1.5 MOVE ROUTINE -- MOVES DATA FROM /D000 THROUGH /0035 TO PROPER CORE
           LOCATION. CHECKS FOR EXCEEDING CORE SIZE. ADDS IN RELOCATION FACTOR
           WHEN REQUIRED.

    5.1.6 RELOCATABLE HEADER ROUTINE -- ENTERED WHEN A RELOCATABLE HEADER CARD

IS FOUND. COMPUTES A RELOCATION FACTOR FOR PROGRAM THAT FOLLOWS.

5.1.7   ABSOLUTE HEADER ROUTINE -- ENTERED WHEN AN ABSOLUTE HEADER CARD IS
        FOUND. SETS RELOCATION FACTOR TO ZERO.

5.1.8   TRANSFER ROUTINE -- ENTERED WHEN A TRANSFER CARD IS FOUND. COMPUTES
        THE NEXT LOCATION AVAILABLE FOR LOADING IF ANOTHER PROGRAM FOLLOWS.
        TRANSFERS CONTROL TO THE LOCATION SPECIFIED ON THE TRANSFER CARD.

5.1.9   HEX TO BINARY CONVERSION ROUTINE -- CONVERTS A HEXADECIMAL CARD TO
        BINARY. ADDS IN RELOCATION FACTOR IF REQUIRED.

5.2   CARD RECOGNITION

        THE FOLLOWING ARE CARDS WHICH CAN BE LOADED BY THE 1800 RELOCATABLE
        DIAGNOSTIC LOADER.

5.2.1   ABSOLUTE HEADER CARDS HAVE A 1 PUNCH IN COLUMN 4.

5.2.2   RELOCATABLE HEADER CARDS HAVE A 0 (ZERO) PUNCH IN COLUMN 4.

5.2.3   NORMAL DATA CARDS HAVE NO PUNCHES IN ROW 12 IN COLUMN 1. AN ADDRESS
        IN ROWS 11 THROUGH 9 IN COLUMN 1 AND ROWS 12 THROUGH 1 IN COLUMN 2.
        A CHECKSUM IN ROWS 2 THROUGH 9 OF COLUMN 2 AND ROWS 12 THROUGH 5 OF
        COLUMN 3. A 12, 0 PUNCH IN COLUMN 4, A WORD COUNT IN ROWS 4
        THROUGH 9 OF COLUMN 4. A RELOCATION FIELD (WHICH MAY BE BLANK) IN
        COLUMN 5 THROUGH 12. DATA IN COLUMNS 13 THROUGH 72. A SEQUENCE
        NUMBER IN COLUMNS 73-80.

5.2.4   BINARY TRANSFER CARDS HAVE 12, 11, 0, 1 PUNCHES IN COLUMN 4 AND A
        WORD COUNT OF ZERO (NO PUNCHES IN ROWS 4 THROUGH 9 IN COLUMN 4).

5.2.5   HEXADECIMAL TRANSFER CARDS HAVE A 12 PUNCH IN COLUMN 1, A TRANSFER
        ADDRESS IN COLUMN 2 THROUGH 5 AND NO PUNCHES IN COLUMNS 6 AND 7.

5.2.6   HEXADECIMAL CORRECTION CARDS HAVE A 12 PUNCH IN COLUMN 1. AN ADDRESS
        IN COLUMN 2 THROUGH 5. DATA IN COLUMNS 6 THROUGH 80.
        DATA IS GROUPED 5 COLUMNS TO ONE CORE WORD. THE FIRST COLUMN OF EACH
        GROUP SPECIFIES WHETHER OR NOT THE GROUP REQUIRES A RELOCATION
        FACTOR. IF THE FIRST COLUMN OF A GROUP IS BLANK A RELOCATION FACTOR
        WILL NOT BE ADDED. IF THE FIRST COLUMN OF A GROUP CONTAINS AN R
        (11,9 PUNCH) A RELOCATION FACTOR WILL BE ADDED TO THE FIELD.
        LOADING OF THE CARD IS TERMINATED BY TWO SEQUENTIAL BLANK COLUMNS.

5.2.7   EDIT CARDS HAVE 12, 5 PUNCHES IN COLUMN 1. DATA IS GROUPED 4 COLUMNS
        PER CORE WORD WITH A BLANK COLUMN AFTER EACH GROUP. LOADING OF THE
        CARD IS TERMINATED BY TWO SEQUENTIAL BLANK COLUMNS.

```
                    ABS                                          8B100020
30F8                ORG     /30F8                                8B100030
         *                                                       8B100040
         ****************************************************    8B100050
         *          WAITS    ERROR COMMENTS                      8B100060
         ****************************************************    8B100070
         *                                                       8B100080
30F8 D 0123    DC     W30F8&1   THE LAST CARD OF THE EDIT        8B100090
         *                 CARD ROUTINE IS NOT INTER-            8B100100
         *                 FACED WITH THE PROGRAM BE-            8B100110
         *                 ING LOADED. CHECK FOR PRO-            8B100120
         *                 PER LOADING PROCEDURE AND             8B100130
         *                 EDIT CARDS. RELOAD PROGRAM            8B100140
         ****************************************************    8B100150
         *                                                       8B100160
30F9 0 00A2    DC     W30F9&1   CHECK SUM ERROR. NORMAL          8B100170
         *                 PROCEDURE IS TO RELOAD.               8B100180
         ****************************************************    8B100330
         *                                                       8B100340
30FA 0 000F    DC     W30FA&1   LOADER ERROR. THIS ERROR         8B100350
         *                 OCCURRED WHILE THE LOADER             8B100360
         *                 WAS BEING LOADER BECAUSE              8B100370
         *                 AN ERROR BIT WAS ON IN THE            8B100380
         *                 DSW. RELOAD LOADER.                   8B100390
         ****************************************************    8B100400
         *                                                       8B100410
30FB 0 0073    DC     W30FB&1   DSW ERROR BIT ON. CLEAR          8B100420
         *                 THE READER AND SET IT UP              8B100430
         *                 TO READ THE SAME INFORMAT-            8B100440
         *                 ION AGAIN. TO CONTINUE                8B100450
         *                 PRESS START.                          8B100460
         ****************************************************    8B100470
         *                                                       8B100480
30FC 0 00BC    DC     W30FC&1   LOADING HAS REACHED THE          8B100490
         *                 UPPER LIMIT OF MEMORY.                8B100500
         *                 CHECK AND RELOAD.                     8B100510
         ****************************************************    8B100520
0000           ORG     0         CARD 0                          8B100530
         *                                                       8B100540
         * THIS IS THE 1ST CARD OF THE LOADER, IT LOADS          8B100550
         *    THE REST OF THE LOADER. (36 WORDS PER CARD)        8B100560
         *                                                       8B100570
0000 0 0811 LD22  XIO     READ1                                  8B100580
0001 0 0812 LD25  XIO     DSW1      CK DSW                        8B100590
0002 4C04 0001     BSC  L  LD25,E   BRANCH IF STILL NOT RDY       8B100600
0004 B00F           CMP     DSW1                                  8B100610
0005 0 7008         MDX     W30FA   LOADER ERROR                  8B100620
0006 0 7006         MDX     LD3D    READY MAY NOT BE ON           8B100630
0007 0 7424 0012    MDX  L  READ1,36                              8B100640
0009 0 74FF 0011    MDX  L  CT,-1   SKIP IF LDR IS IN             8B100650
000B 0 70F4         MDX     LD22                                  8B100660
000C 0 701F         MDX     LD36                                  8B100670
000D 0 B008 LD30  CMP     MSK5      CK IF B5 OR B6 ON             8B100680
000E 0 30FA W30FA DC      /30FA     LOADING ERROR OF LOADER       8B100690
000F 0 70FE         MDX     W30FA   * RELOAD PROGRAM              8B100700
0010 0 70F0         MDX     LD25    READY NOT ON                  8B100710
0011 0 0007 CT    OC      7                                       8B100720
0012 0000           BSS  E  0                                     8B100730
0012 0 002C READ1 DC      44                                      8B100740
0013 0 1601         DC      /1601                                 8B100750
0014 0 0800 DSW1  DC      /0800                                   8B100760
0015 0 1700         DC      /1700                                 8B100770
0D16 0 D100 MSK5  DC      /010D                                   8B100780
         ****************************************************    8B100790
002C           ORG     44        CARD 1                           8B10D800
         *                                                       8B100810
         ****************************************************    8B100820
         *                                                 *     8B100830
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IBM MAINTENANCE DIAGNOSTIC PROGRAM FOR THE 1800 SYSTEM PART NO. 2196459
  PAGE 1A
RELOCATABLE DIAGNOSTIC LOADER (4K-65K CARDS)

```
         *      4K TO 65K CORE SIZE DETERMINATION RTN       *    8B100840
         *                                                  *    8B100850
         ****************************************************    8B100860
002C 0 6100 LD36  LDX   1 0       SET CONTROL INDEX             8B100870
002D 0 C007       LD      STGCK&1  GET CONSTANT FFFF & SET       8B100880
002E 0 D1FF       STO   1 -1       IN MAXIMUM ADDRESS            8B100890
         *                                                       8B100900
002F 0 7500 1000 STGLP MDX L1 /1000  ADVANCE CONTROL INDEX       8B100910
0031 0 1000       NOP     0         SAFETY NOP FOR 32K CORE      8B100920
0032 0 1010       SLA     16        CLEAR ACCUMULATOR AND SET    8B100930
0033 0 D1FF       STO   1 -1       IN 4K CORE BLOCK MAX ADDR     8B100940
         *                                                       8B100950
0034 0 C400 FFFF STGCK LD   L /FFFF  GET MAX CORE ADDRESS DATA   8B100960
0036 0 4C20 002F       BSC  L STGLP,Z  CHECK IT FOR ZERO         8B100970
         *                 BRANCH LOOP IF NOT MAX                8B100980
         *                                                       8B100990
0038 0 71FF       MDX   1 -1       DECREMENT X1 TO ACTUAL        8B101000
         *                 MAXIMUM ADDRESS THIS CPU              8B101010
         *                                                       8B101020
0039 0 1000       NOP     0         SAFETY NOP FOR 32K CORE      8B101030
003A 0 6000 0126 STX   L1 ULIM     STORE MAX CORE SIZE          8B101040
003C 0 7013       MDX     RD05      BR TO CONTINUE               8B101050
         ****************************************************    8B101060
0050           ORG     80        CARD 2                          8B101070
         *                                                       8B101080
         * THIS ROUTINE READS THE OBJECT CARDS                   8B101090
         *                                                       8B101100
0050 0 0817 RD05  XIO     MSK       MASK                         8B101110
0051 0 0818       XIO     MSK2      MASK 2ND SET                 8B101120
0052 0 C01D RD20  LD      DSW       CK LAST CARD SW              8B101130
0053 0 4CA0 0123       BSC  I MLCD,Z  GO TO MONITOR IF ON        8B101140
0055 0 0816       XIO     READ      READ A CARD                  8B101150
0056 0 0819 RD25  XIO     DSW       CK READY                     8B101160
0057 0 4C04 0056       BSC  L RD25,E  XFER IF NOT READY          8B101170
0059 0 1003       SLA     3         ERR TO CARRY, LAST CD- 80    8B101180
005A 0 4828       BSC     &Z        IS LAST CARD ON              8B101190
005B 0 6814       STX     DSW       SET LAST CARD SW             8B101200
005C 0 4C02 0072       BSC  L W30FB,C  ERROR BIT ON              8B101210
005E 0 C0A1       LD      LD22                                   8B101220
005F 0 4C28 00F0       BSC  L HB05,&Z                            8B101230
0061 0 1810       SRA     16                                     8B101240
0062 0 D07A       STO     HEXSW     INDICATE BINARY CARD         8B101250
0063 0 7010       MDX     SB05                                   8B101260
         *                                                       8B101270
0064 0 30D0 K3000 DC     /3000     CONSTANT                      8B101280
0065 0 1084 SL    SLT     4                                      8B101290
0066 0 1088       SLT     8                                      8B101300
0067 0 108C       SLT     12                                     8B101310
0068 0 0000       BSS  E  0                                      8B101320
0068 0 FFFF MSK   DC      /FFFF                                  8B101330
0069 0 0480       DC      /0480                                  8B101340
006A 0 FFFF MSK2  DC      /FFFF                                  8B101350
006B 0 0481       DC      /0481                                  8B101360
006C 0 0000 READ  DC      LD22                                   8B101370
006D 0 1600       DC      /1600                                  8B101380
006E 0 0001 ONE   DC      1                                      8B101390
         *                                                       8B101400
006F 0 07FF RLBA  OC      2047      **KEEP AT /6F, BASE ADDRESS   8B101410
         *                                                       8B101420
0070 0 0000 DSW   DC      0         SENSE DSW & LAST CD SW       8B101430
0071 0 1701       DC      /1701                                  8B101440
         *                                                       8B101450
0072 0 30FB W30FB DC      /30FB     ERROR LIST ON IN DSW         8B101460
0D73 0 7DDE       MDX     RD20                                   8B101470
         ****************************************************    8B101480
0074           ORG     116       CARD 3                          8B101490
         *                                                       8B101500
         *                                                       8B10151D
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                    * THIS RT PACKS BINARY DATA AND LEAVES IT IN        8B101520
                    *   LOCATIONS 0000-0040.                            8B101530
                    *                                                   8B101540
0074 0 61B8    SB05 LDX   1 -72                                         8B101550
0075 0 6300         LDX   3 0                                           8B101560
0076 0 62FD    SB06 LDX   2 -3                                          8B101570
0077 0 C268    SB07 LD    2 SL&3                                        8B101580
0078 0 0004         STD     SB10                                        8B101590
0079 0 C149         LD    1 73         CDIN&73                          8B101600
007A 0 1800         RTE   16                                            8B101610
007B 0 C148         LD    1 72         CDIN&72                          8B101620
007C 0 1804         SRA   4                                             8B101630
007D 0 1000    SB10 SLA   0                                             8B101640
007E 0 0300         STD   3 0          COIN                             8B101650
007F 0 7301         MDX   3 1                                           8B101660
0080 0 7101         MDX   1 1                                           8B101670
0081 0 7201         MDX   2 1                                           8B101680
0082 0 70F4         MDX     SB07        FINISHED                        8B101690
0083 0 7101         MDX   1 1                                           8B101700
0084 0 70F1         MDX     SB06                                        8B101710
               *                                                        8B101720
               * THIS RT DETERMINES WHETHER THE DATA CARD IS            8B101730
               * 1= ABSOLUTE HDR CARD  2= RELOCATABLE HDR CARD          8B101740
               *                                                        8B101750
0085 0 C102         LD    1 2          CK FOR HDR CARDS                 8B101760
0086 0 4C18 0050    BSC  L RD05,&-     IGNORE BLANK CARD                8B101770
0088 0 E052         AND     LB20                                        8B101780
0089 0 9052         S       LB25                                        8B101790
008A 0 4C18 00E1    BSC  L ABHED,&-    BCH IF ABSOL HEAD CARD           8B101800
008C 0 904F         S       LB25                                        8B101810
008D 0 4C18 000F    BSC  L RLHED,&-    BCH IF RELOC HEAD CARD           8B101820
               *                                                        8B101830
008F 0 7400 0008    MDX  L SW,0                                         8B101840
0091 0 7005         MDX     TAKE                                        8B101850
               *                                                        8B101860
0092 0 C100         LD    1 0          GET CARD ADRS                    8B101870
0093 0 B000         CMP     K3000       CMP 3000                        8B101880
0094 0 B068         CMP     K74FF       GRTR 3000 CMP 74FF              8B101890
0095 0 7001         MDX     TAKE        LESS 3000 SAME GRTR 74FF        8B101900
0096 0 704C         MDX     PASS        EQUAL 3000 SAME LESS 74FF       8B101910
0097 0 6840    TAKE STX     SW          LOAD PROGRAM                    8B101920
               *****************************************************    8B101930
0098                ORG   152           CARD 4                          8B101940
               *                                                        8B101950
0098 0 C040         LD      CDCT                                        8B101960
0099 0 62CA         LDX   2 -54                                         8B101970
009A 0 8236    HSCK A     2 54                                          8B101980
009B 0 4802         BSC     C                                           8B101990
009C 0 8001         A       ONE                                         8B102000
009D 0 7201         MDX   2 1                                           8B102010
009E 0 70FB         MDX     HSCK                                        8B102020
009F 0 80CE         A       ONE                                         8B102030
00A0 0 4820         BSC     Z                                           8B102040
00A1 0 30F9    W30F9 DC    /30F9        CHECK SUM ERROR                 8B102050
00A2 0 C102         LD    1 2           GET CDIN&2                      8B102060
00A3 0 E036         AND     LB15                                        8B102070
00A4 0 0039         STO     PCAM                                        8B102080
00A5 0 4818         BSC     &-          SKIP IF NOT XFER CARD           8B102090
00A6 0 703F         MDX     XFRCD       BRANCH TO XFER RT               8B102100
               *                                                        8B102110
               * THIS RT PLACES DATA FIELDS INTO THE CORRECT            8B102120
               *   CORE LOCATIONS ANY ADDS IN A RELOCATION              8B102130
               *   FACTOR IF REQUIRED.                                  8B102140
               *                                                        8B102150
00A7 0 6209         LDX   2 9           SET FOR 1ST DATA WD             8B102160
00A8 0 6100    LB06 LDX   1 0                                           8B102170
00A9 0 C033         LD      HEXSW       CK FOR EDIT CARD                8B102180
00AA 0 1007         SLA   7                                             8B102190
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00AB 0 4CA8 0124    BSC  I MECD,&Z     XFER IF EDIT CARD                8B102200
00AD 0 6A06         STX   2 LB10&1                                      8B102210
00AE 0 C100         LD    1 0                                           8B102220
00AF 0 8077         A       UPPER                                       8B102230
00B0 0 0100         STO   1 0           STO IN CDIN                     8B102240
00B1 0 6680 0000    LDX   I2 LD22                                       8B102250
00B3 0 C500 0000 LB10 LD    L1 0                                        8B102260
00B5 0 D200         STO   2 0                                           8B102270
00B6 0 6A72         STX   2 TEMP        CK FOR EXCEEDING CORE           8B102280
00B7 0 C071         LD      TEMP                                        8B102290
00B8 0 F06D         EOR     ULIM                                        8B102300
00B9 0 4820         BSC     Z                                           8B102310
00BA 0 7002         MDX     OVER1                                       8B102320
00BB 0 30FC    W30FC DC    /30FC        ERROR EXCEEDED CORE SIZE        8B102330
               *****************************************************    8B102340
00BC                DRG   188           CARD 5                          8B102350
               *                                                        8B102360
00BC 0 70FE         MDX     W30FC                                       8B102370
00BD 0 7201    OVER1 MDX   2 1                                          8B102380
00BE 0 7101         MDX   1 1                                           8B102390
00BF 0 74FF 000E    MDX  L PCAM,-1      SKIP IF WORD COUNT ZERO         8B102400
00C1 0 70F1         MDX     LB10                                        8B102410
00C2 0 C01A         LD      HEXSW                                       8B102420
00C3 0 4C28 0050    BSC  L RD05,&Z                                      8B102430
00C5 0 6780 0000 RLDAT LDX   I3 LD22    SET X3 TO START ADDR            8B102440
00C7 0 62FA         LDX   2 -6          SET FOR 6 CONTROL WD            8B102450
00C8 0 6108         LDX   1 8           8 LOCS PER WD                   8B102460
00C9 0 C209    CKFLD LD    2 9          GET RELOC CONTROL               8B102470
00CA 0 1002         SLA   2                                             8B102480
00CB 0 0209         STO   2 9                                           8B102490
00CC 0 4C20 0004    BSC  L RLCAT,C      BRANCH IF RELOC FIELD           8B102500
00CE 0 7301    INCRE MDX   3 1                                          8B102510
00CF 0 71FF         MDX   1 -1          TEST FOR CNTRL WD END           8B102520
00D0 0 70F8         MDX     CKFLD       ND                              8B102530
00D1 0 7201         MDX   2 1           TEST FOR FIN ALL WDS            8B102540
00D2 0 70F5         MDX     CKFLD-1     NO                              8B102550
00D3 0 700F         MDX     PASS                                        8B102560
00D4 0 C300    RLCAT LD    3 0          ADD IN RELOCATION FACTOR        8B102570
00D5 0 8051         A       UPPER                                       8B102580
00D6 0 0300         STO   3 0                                           8B102590
00D7 0 70F6         MDX     INCRE                                       8B102600
00D8 0 0000    SW   DC    /0000         IF ZERO CK FOR WAITS-TRAPS      8B102610
00D9 0 0000    CDCT DC    0                                             8B102620
00DA 0 003F    LB15 DC    /003F                                         8B102630
00DB 0 0F00    LB20 DC    /0F00                                         8B102640
00DC 0 0100    LB25 DC    /0100                                         8B102650
00DD 0 0000    HEXSW DC    0                                            8B102660
00DE 0 0000    PCAM DC    0             WORD COUNT                      8B102670
               *                                                        8B102680
               * THIS RT. HANDLES RELOCATABLE HDR CARDS.                8B102690
               *                                                        8B102700
00DF 0 C045    RLHED LD      NLOC        COMPUTE RELOC FACTOR           8B102710
               *****************************************************    8B102720
00E0                DRG   224           CARD 6                          8B102730
               *                                                        8B102740
00E0 0 908E         S       RLBA                                        8B102750
               *                                                        8B102760
               * THIS RT. HANDLES ABSOLUTE HDR CARDS.                   8B102770
               *                                                        8B102780
00E1 0 D045    ABHED STO     UPPER                                      8B102790
00E2 0 69F6         STX   1 CDCT                                        8B102800
00E3 0 7401 00D9 PASS MDX  L CDCT,1     INCR CARD COUNT                 8B102810
00E5 0 6050         LDX     80                                          8B102820
               *                                                        8B102830
               * THIS RT. HANDLES BINARY AND HEX XFER CARDS             8B102840
               *                                                        8B102850
00E6 0 C100    XFRCD LD    1 0                                          8B102860
00E7 0 8086         A       ONE                                         8B102870
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00E8 0 803E          A       UPPER                              8B102880
00E9 0 D038          STO     NLOC      SET NEXT AVAIL LOC         8B102890
00EA 0 C103          LD      1 3       SET UP TO XFER             8B102900
00EB 0 803B   XFR2   A       UPPER                               8B102910
00EC 0 69E8          STX     1 SW      CLEAR SW                   8B10292D
00ED 0 D001          STO     XFER&1                               8B102930
00EE 0 4C00 0000 XFER BSC L  0                                   8B102940
             *                                                   8B102950
             * THIS RT CONVERTS HEX TO BINARY AND LEAVES I       8B102960
             *  IN LOCATIONS 0000-0010 , FIELDS ARE RELOCATED    8B102970
             *  IF REQUIRED.                                     8B102980
             *                                                   8B102990
00F0 0 61AF   HB05   LDX     1 -81                               8B103000
00F1 0 D0E8          STO     HEXSW     SET FOR HEX OR EDIT CD     8B103010
00F2 0 1810          SRA     16                                  8B103020
00F3 0 D0EA          STO     PCAM                                8B103030
00F4 0 1810   H806   SRA     16                                  8B103040
00F5 0 D032          STO     RLREQ                               8B103050
00F6 0 C151          LD      1 81      CK FOR RELOC FIELD         8B103060
00F7 0 1001          SLA     1                                   8B103070
00F8 0 4828          BSC     &Z                                  8B103080
00F9 0 682E          STX     RLREQ                               8B103090
00FA 0 7101          MDX     1 1                                 8B103100
00FB 0 7006          MDX     H807                                8B103110
             *                                                   8B103120
             * THIS RT DETERMINES WHETHER A HEX CARD IS A        8B103130
             *  1¤ DATA CD  2¤ EDIT CD  3¤ XFER CARD .           8B103140
             *                                                   8B103150
00FC 0 6201   LH05   LDX     2 1       SET X2 # CDIN&1            8B103160
00FD 0 74FF 000E K74FF MDX L PCAM,-1                             8B103170
00FF 0 70A8          MDX     LB06                                8B103180
0100 0 C2FF          LD      2 -1      CDIN                       8B103190
0101 0 70E9          MDX     XFR2      BRANCH TO XFER RT          8B103200
0102 0 6204   HB07   LDX     2 4                                 8B103210
0103 0 1004   HB10   SLA     4                                   8B103220
             *********************************************       8B103230
0104                 ORG     260       CARD 7                    8B103240
             *                                                   8B103250
0104 0 D025          STO     TEMP1                               8B103260
0105 0 C151          LD      1 81      COIN&81                    8B103270
0106 0 4C18 00FC     BSC L   LH05,&-                             8B103280
0108 0 6300          LDX     3 0       CONVERT 1 HEX COL TO BIN   8B103290
0109 0 4828          BSC     &Z        SKIP IF NOT A-F           8B103300
010A 0 7309          MDX     3 9       ADD 9 FOR ALPHA           8B103310
010B 0 1003          SLA     3         ELIMINATE ZONE BITS       8B103320
010C 0 4C1B 0115     BSC L   HTBZ,&-   XFER IF HEX CHAR # 0       8B103330
010E 0 7301          MDX     3 1                                 8B103340
010F 0 4C28 0113 HTOB1 BSC L HTBX,&Z   XFER IF BIT IS FOUND       8B103350
0111 0 1001          SLA     1         PREPARE TO LK AT NEXT BIT 8B103360
0112 0 70FB          MDX     HTOB1-1                             8B103370
0113 0 6B15   HTBX   STX     3 TEMP                              8B103380
0114 0 C014          LD      TEMP      LOAD BINARY BITS          8B103390
0115 0 E814   HTBZ   OR      TEMP1     ADD TO PREVIOUS CHARS     8B103400
0116 0 7101          MDX     1 1                                 8B103410
0117 0 72FF          MDX     2 -1                                8B103420
0118 0 70EA          MDX     H810                                8B103430
0119 0 6780 000E     LDX     I3 PCAM                             8B103440
011B 0 7400 0128     MDX L   RLREQ,0                             8B103450
011D 0 8009          A       UPPER                               8B103460
011E 0 D300          STO     3 0                                 8B103470
011F 0 7401 000E     MDX L   PCAM,1                              8B103480
0121 0 70D2          MDX     HB06                                8B103490
             *                                                   8B103500
0122 0 30F8   W30F8 DC       /30F8     EDIT CARD ERROR           8B103510
             *                                                   8B103520
0123 0 0122   MLCD  DC       W30F8     **KEEP AT /123, CHG BY USER 8B103530
0124 0 0122   MECD  DC       W30F8     **KEEP AT /124, CHG BY USER 8B103540
0125 0 07FF   NLOC  DC       /07FF     **KEEP AT /125, NEXT LOCATIO 8B103550
```

```
0126 0 1000   ULIM  DC    /1000   **KEEP AT /126, UPPER LIMIT  8B103560
0127 0 0000   UPPER DC    /0000   **KEEP AT /127, UPPER LIMIT  8B103570
0128 0 0000   RLREQ DC    /0000   I COUNTER STORAGE            8B103580
0129 0 0000   TEMP  DC    /0000   TEMP STORAGE                 8B103590
012A 0 0000   TEMP1 DC    /0000   TEMP STORAGE                 8B103600
             *************************************************  8B103610
012C  0000          END   LD22    TRANSFER TO START            8B103620
             NO STATEMENTS FLAGGED IN THE ABOVE ASSEMBLY
```

ABHED	00E1	008A
CDCT	00D9	0098	0DE2	00E3
CKFLD	00C9	0000	00D2
CT	0011	0009
DSW	0070	0052	0056	005B
DSW1	0014	0001	0004
HB05	00F0	005F
HB06	00F4	0121
HB07	D102	00FB
HB10	0103	0118
HEXSW	00DD	0062	00A9	00C2	00F1
HSCK	009A	009E
HTBX	0113	010F
HTBZ	0115	010C
HTOB1	010F	0112
INCRE	00CE	00D7
K300D	0064	0093
K74FF	00F0	0094
LB06	00A8	00FF
LB10	DDB3	00A0	00C1
LB15	00DA	00A3
LB20	00DB	0088
LB25	00DC	0089	008C
LD22	0000	000B	005E	006C	00B1	00C5	012C
LD25	0001	0002	0010
LD30	000D	0006
L036	002C	000C
LH05	00FC	0106
MECD	0124	00AB
MLCD	0123	0053
MSK	0068	0050
MSK2	006A	0051
MSK5	0016	000D
NLOC	0125	000F	00E9
DNE	006E	009C	009F	00E7
OVER1	00BD	00BA
PASS	00E3	0096	0003
PCAM	00DE	00A4	00BF	00F3	00FD	0119	011F
RD05	0050	D03C	0086	00C3
RD20	0052	0073
RD25	0D56	0057
READ	0D6C	0055
READ1	0012	0000	0007
RLBA	006F	00E0
RLCAT	0004	00CC
RLDAT	00C5
RLHED	00DF	0080
RLREQ	0128	00F5	00F9	011B
SB05	0074	0063
SB06	0076	0084
SB07	0077	0082
SB10	007D	0078
SL	0065	0077
STGCK	0034	002D
STGLP	002F	0036
SW	00D8	008F	0097	00EC
TAKE	0097	0091	0095
TEMP	0129	00B6	00B7	0113	0114
TEMP1	012A	0104	0115
ULIM	0126	003A	00B8
UPPER	0127	00AF	0005	00E1	00E8	00EB	0110
W30FA	000E	0005	000F	30FA
W30FB	0072	005C	30FB
W30FC	00BB	00BC	30FC
W30F8	0122	0123	0124	30F8
W30F9	00A1	30F9
XFER	00EE	00ED
XFRCD	00E6	00A6

| XFR2 | 00EB | 0101 |
| END OF ASSEMBLY | | |

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TABLE OF CONTENTS

1. PURPOSE

    THE TIMER FUNCTION TEST IS USED TO DETERMINE WHETHER THE INTERVAL TIMER
    CIRCUITS IN THE 1801 OR 1802 PROCESS/CONTROLLER ARE OPERATING PROPERLY.
    TIMER STEPPING, TIMER INTERRUPTS, DSW, AND ILSW ARE TESTED.

2. PREREQUISITES

    2.1   PROGRAM PREREQUISITES

        THE BASIC DIAGNOSTIC LOADER IS REQUIRED TO LOAD THIS PROGRAM.

    2.2   EQUIPMENT PREREQUISITES

        THE FOLLOWING EQUIPMENT IS REQUIRED.

        A. 1800 PROCESSOR/CONTROLLER.

        B. 1442 CARD READ/PUNCH OR 1054 PAPER TAPE READER.

        C. EITHER A 1053/1816 OR 1443 PRINTER.

3. USE PROCEDURE

    3.1   PROGRAM LOADING

        REFER TO 1800 BASIC DIAGNOSTIC LOADER DOCUMENTATION PARAGRAPH 3.1.
        FOR LOADING INSTRUCTIONS.

    3.2   PROGRAM OPERATION

        AFTER LOADING THE P.C. STOPS AT WAIT 1 (B REG=3001).
        WITH P.C. STOPPED AT WAIT 1, PROCEED AS FOLLOWS,

        A. SET CHECK STOP SWITCH TO OFF.
        B. SET DISABLE INTERRUPT SWITCH TO OFF.
        C. SET WRITE STORAGE PROTECT SWITCH TO YES.
        D. SELECT PROGRAM OPTIONS. REFER TO TABLE 1 SECTION 3.2
        E. IF LOOP ROUTINE IS DESIRED, REFER TO LOOP ROUTINE OPTION
            TABLE 2 SECTION 3.2 .
        F. DEPRESS START BUTTON. PROGRAM SHOULD START EXECUTION.

           1. IF LOOP ROUTINE OR LOOP PROGRAM WERE NOT SPECIFIED, ROUTINES
              1 THROUGH 6 WILL BE EXECUTED ONCE. THE PROGRAM WILL PRINT
              MESSAGE ''A002 PROGRAM COMPLETE'' AND THEN STOP AT WAIT 2.
              (B REG=3002).

           2. IF A ROUTINE WAS SELECTED FOR LOOPING, THEN THAT ROUTINE
              WILL LOOP UNTIL THE PROGRAM IS TERMINATED, OR THE LOOP
              ROUTINE FUNCTION IS CHANGED OR CLEARED. IF THE LOOP ROUTINE
              FUNCTION IS CHANGED, THEN THE NEW ROUTINE SELECTION WILL BE
              LOOPED. IF THE LOOP ROUTINE FUNCTION IS CLEARED, THE PROGRAM
              WILL CONTINUE FROM THE PRESENT ROUTINE TO COMPLETION.

           3. IF LOOP PROGRAM WAS SELECTED, ROUTINES 1 THROUGH 6 WILL BE
              RUN IN SEQUENCE IN A LOOP FASHION. AT THE END OF EACH
              PROGRAM PASS, MESSAGE ''A003 PASS COMPLETE'' WILL BE PRINTED.

           4. IF THE SCOPING ROUTINE WAS SELECTED, MESSAGE ''A001 SCOPE
              RTN SELECTED'' WILL BE PRINTED, FOLLOWED BY MESSAGE ''C002
              ENTER STARTING COUNT''. THE PROGRAM WILL STOP AT WAIT 5
              (B REG=3005). THE PRINTOUT EXPLANATIONS SHOULD BE CONSULTED
              FROM THIS POINT FOR THE OPERATION OF THE SCOPING ROUTINE.
              PRINTOUT SECTION 4.2 COMMAND MESSAGES.

TABLE 1
PROGRAM OPTIONS - DATA ENTRY SWITCHES

NOTE

THE OPTIONS FOR SELECTING OUTPUT DEVICE, THE SCOPING ROUTINE, UR THE
CORE SPEED WILL BE HONORED ONLY IF THEY ARE ENTERED WHEN PROGRAM IS STOPPED
AT WAIT 1 (B REG=3001).

```
•••••••••••••••••••••••••••••••••••••••••••••••••••••••••••••••••••••••
•        DATA ENTRY SWITCHES         •       OPTION DESCRIPTION        •
•                                    •                                 •
• 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 •                              •
•                    •  •    •  •  •  •                                •
•                    •  •    •  •  1.....HALT ON ERROR                 •
•                    •  •    •  1........BYPASS ERROR PRINT            •
•                    •  •    1...........LOOP ON ERROR                 •
•                    •  1................LOOP PROGRAM                  •
•                    1...................USE 1443 AS OUTPUT DEVICE     •
•               1........................SELECT SCOPING ROUTINE        •
•          1.............................4 USEC MACHINE                •
•                                                                     •
•••••••••••••••••••••••••••••••••••••••••••••••••••••••••••••••••••••••
```

TABLE 2
LOOP ROUTINE OPTION - SENSE/PROGRAM SWITCHES

```
•••••••••••••••••••••••••••••••••••••••••••••••••••••••••••••••••••••••
•  PROGRAM/SENSE  • DESCRIPTION                                        •
•                 •                                                   •
•  0 1 2 3 4 5 6 7 •                                                  •
•       • • •      •                                                  •
•       X X X...ROUTINE NUMBER TO LOOP. NUMBER MUST BE IN HEX. NUMBER MAY •
•               BE CHANGED AT ANY TIME.                               •
•                                                                     •
•••••••••••••••••••••••••••••••••••••••••••••••••••••••••••••••••••••••
```

3.3   TERMINATING PROCEDURE

IF THE LOOP-PROGRAM, OR LOOP-RUUTINE OPTIONS ARE NOT SELECTED THE
PROGRAM WILL BE EXECUTED ONCE AND WILL STOP AT WAIT 2 FOLLOWING THE
PROGRAM COMPLETE PRINTUUT. DEPRESSING THE START PUSHBUTTON WILL
BRANCH THE PROGRAM TO WAIT 1, WHICH IS THE BEGINNING OF THE PROGRAM.

IF THE PROGRAM IS IN A LOOPING MODE, IT MAY BE TERMINATED BY,

1. DEPRESSING THE STOP BUTTON. DEPRESSING RESET AND START BUTTONS
WILL RETURN PROGRAM TO WAIT 1.

2. CLEARING THE LOOP FUNCTION, TO ALLOW PROGRAM TO RUN TO ITS
COMPLETION.

3.4   RESTART PROCEDURE

PRESS THE STOP, RESET AND START BUTTONS. THE PROGRAM SHOULD GO TO
WAIT 1. IF THIS DOES NOT OCCUR, THE PROGRAM MUST BE RELOADED.

3.5   PROGRAM HALTS

PROGRAM WAITS ARE USED IN THIS PROGRAM, AND ARE IDENTIFIED BY
REFERENCING THE B REG AND I REG.

A PROGRAM WAIT IS OF THE FORM,

30XX, (B REG).

A DESCRIPTION OF THE INDIVIDUAL PROGRAM WAITS CAN BE FOUND AT THE
BEGINNING OF THE PROGRAM LISTING. A TYPICAL WAIT DESCRIPTION FOLLOWS.
IT IS INCLUDED TO SHOW THE FORMAT OF THE LISTING, AND IT IS NOT
NECESSARILY A DESCRIPTION OF AN ACTUAL WAIT.

```
••••••••••••••••••••••••••••••••••••••••••••••••••••••••••••••••••••••••
3001 0 01ED          DC      WAIT1+1
  •                                  WAIT 1
  •                          ONE OF THE METERED I/O UNITS
  •                          FAILED TO SEND A RESPONSE
  •                          INTERRUPT TO THE PROGRAM. INDEX
  •                          REGISTER 1 WILL HAVE THE ADDRESS
  •                          OF THE IOCC. THE AREA CODE WILL
  •                          INDICATE THE I/O UNIT NOT READY.
  •                          IF A 2401/02 DRIVE IS NOT READY,
  •                          PROGRAM WILL NOT STOP AT WAIT 1.
  •
••••••••••••••••••••••••••••••••••••••••••••••••••••••••••••••••••••••••
```

B REG, (FIRST 4 DIGIT GROUP) CORRESPONDS TO B REG READING.

I REG, (SECOND 4 DIGIT GROUP) CORRESPONDS TO I REG READING.

4.   PRINTOUTS

THE VARIOUS PRINTOUTS THAT MAY OCCUR DURING EXECUTION OF THE TIMER
FUNCTION TEST FOLLOW.

4.1   STATUS MESSAGES

A001 SCOPE RTN SELECTED

THIS PRINTOUT INDICATES THAT THE SCOPE RTN HAS BEEN SELECTED AS A
RESULT OF SETTING ON DATA ENTRY SWITCH NO. 8 WHEN PROGRAM STOPPED AT
WAIT 1.

A002 PROGRAM COMPLETE

FOLLOWING THIS PRINTOUT PROGRAM STOPS AT WAIT 2. DEPRESSING START
PUSHBUTTON CAUSES PROGRAM TO BRANCH TO WAIT 1. AT THIS POINT
PROGRAM MAY BE REPEATED AGAIN.

A003 PASS COMPLETE

PRINTED AT THE END OF EACH PROGRAM PASS WHEN THE LOOP PROGRAM
OPTION IS SELECTED.

4.2   COMMAND MESSAGES

C001 RUN SCOPE RTN

THIS PRINTOUT INSTRUCTS THE OPERATOR TO RUN THE PROGRAM IN SCOPE
RTN, AND IS CAUSED IF THE CONTROL ROUTINE IS UNABLE TO DETERMINE
TIMER INTERRUPT LEVEL DUE TO ALL TIMERS FAILING TO INTERRUPT, OR
STEP.

INTERVAL TIMER FUNCTION TEST

C002 ENTER STARTING COUNT

    THIS PRINTOUT IS A SCOPE ROUTINE REQUEST FOR OPERATOR ACTION.
    ENTER THE DESIRED STARTING COUNT IN THE DATA ENTRY SWITCHES. PUSH
    START AFTER ENTRY.

    ....
        DATA ENTRY SWITCHES   DESCRIPTION

    0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 •
    : : : : : : : : : : : : : : : :
    X X X X X X X X X X X X X X X X...DESIRED STARTING COUNT IN HEX
    ....

C003 ENTER NUMBER OF STEPS

    THIS PRINTOUT IS A SCOPE ROUTINE REQUEST FOR OPERATOR ACTION. ENTER
    THE DESIRED NUMBER OF STEPS IN THE DATA ENTRY SWITCHES. A COUNT OF
    ZERO IS INVALID AND WILL CAUSE MESSAGE C003 TO BE PRINTED AGAIN.
    PUSH START AFTER ENTRY.

    ....
        DATA ENTRY SWITCHES   DESCRIPTION

    0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 •
    : : : : : : : : : : : : : : : :
    X X X X X X X X X X X X X X X X...DESIRED NUMBER OF STEPS IN HEX
    ....

C004 ENTER TIMER NUMBER

    THIS PRINTOUT IS A SCOPE ROUTINE REQUEST FOR OPERATOR ACTION. ENTER
    THE DESIRED TIMER SELECTION IN DATA ENTRY SWITCHES. ONLY 1 TIMER AT
    A TIME MAY BE SELECTED. TIMER C IS USED IF NO ENTRY IS MADE. CLEAR
    ALL UNUSED SWITCHES. PUSH START AFTER ENTRY.

    ....
        DATA ENTRY SWITCHES   DESCRIPTION

    0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 •
    .   . . .
    .   0 0 1........................RUN TIMER C
    .   0 1 0........................RUN TIMER B
    .   1 0 0........................RUN TIMER A
    1...............................CHANGE INPUT PARAMETERS. (SEE NOTE 1)

    NOTE 1. AFTER ROUTINE IS LOOPING, AND IT IS DESIRED TO CHANGE STARTING
            COUNT, NUMBER OF STEPS, OR TIMER NUMBER, SET SWITCH 2 ON. ROUTINE
            RESTARTS AND PRINTS MESSAGE C002.
    ....

C005 REPAIR FAILURE BEFORE CONTINUING

    PRINTED FOLLOWING ERRORS E00B AND E00C. PROGRAM GOES TO WAIT 1
    AFTER THIS PRINTOUT TO ALLOW CE TO SELECT SCOPING ROUTINE. ERRORS
    E00B AND E00C CAN CAUSE PROGRAM TO LOOSE CONTROL OR INDICATE FALSE
    ERRORS.

INTERVAL TIMER FUNCTION TEST

    4.3   DATA MESSAGES

D001 TIMERS ON INTRP LEVEL XX

        THIS PRINTOUT INDICATES THE INTERRUPT LEVEL OF THE TIMERS. XX WILL
        BE THE ACTUAL INTERRUPT LEVEL NUMBER, IN DECIMAL.

    4.4   ERROR MESSAGES

E001 SEQUENCE ERROR

        THIS PRINTOUT OCCURS WHEN THE ROUTINE JUST RUN DOES NOT AGREE WITH
        THE ROUTINE SELECTED BY THE CONTROL ROUTINE.

E002 TIMERS FAIL TO STEP

        THIS PRINTOUT OCCURS WHEN THE CONTROL SECTION IS UNABLE TO
        DETERMINE THE TIMER INTERRUPT LEVEL DUE TO TIMERS NOT STEPPING. THIS
        IS FOLLOWED BY A ''RUN MANUAL MODE'' PRINTOUT.

E003 TIMERS FAIL TO INTRP

        THIS PRINTOUT OCCURS WHEN THE CONTROL SECTION IS UNABLE TO DETERMINE
        THE TIMER INTERRUPT LEVEL DUE TO TIMERS FAILING TO INTERRUPT. THIS
        PRINTOUT IS FOLLOWED BY A ''RUN MANUAL MODE'' PRINTOUT.

E004 RTN 2 TIMER X FAILED TO TURN ON

        THIS PRINTOUT RESULTS IF A TIMER (A, B, OR C) FAILS TO STEP AFTER
        BEING TURNED ON. 10 CONSECUTIVE PRINTOUTS MAY RESULT, AS 10 TRIES
        ARE MADE ON EACH TIMER.

E005 RTN 2 TIMER X FAILED TO TURN OFF

        THIS PRINTOUT RESULTS WHEN A TIMER (A, B, OR C) CONTINUES TO STEP
        AFTER A TURN OFF COMMAND. 10 CONSECUTIVE PRINTOUTS ARE POSSIBLE.

E006 RTN 3 TIMER X FAILED TO INTRP

        THIS PRINTOUT OCCURS WHEN A TIMER (A, B, OR C) FAILS TO INTERRUPT.

E007 RTN 3 TIMER X DSW XXXX

        THIS PRINTOUT OCCURS WHEN THE DSW BIT FOR THE INDICATED TIMER (A, B,
        OR C) IS IN ERROR.

E008 RTN 3 TIMER X ILSW XXXX

        ONE PRINTOUT FOR EACH TIMER WILL OCCUR IF THE ILSW BIT IS NOT THE
        SAME FOR ALL TIMERS.

E009 RTN 4 TIMER X WAS XXXX SHOULD BE XXXX

        THIS PRINTOUT OCCURS WHEN EXPECTED AND ACTUAL TIMER COUNTS DO NOT
        AGREE.

E00A RTN 5 TX WAS XXXX EXPCTD XXXX PASS X

THIS PRINTOUT OCCURS WHEN EXPECTED AND ACTUAL TIMER COUNTS DO NOT
AGREE. PASS 1 IS RUN WITH INTERRUPT OFF, PASS 2 IS RUN WITH INTERUPT
ON.

E00B RTN1 DOUBLE INCR OF I CTR DURING TMR X CS CYCLE

THE DESIGNATED TIMER CAUSED THE I COUNTER TO BE INCREMENTED DURING
THE SECOND TIMER CYCLE STEAL CYCLE. THIS PRINTOUT WILL BE FOLLOWED
BY MESSAGE C005.

E00C ILLEGAL RTN ENTRY

A ROUTINE NUMBER OF 7 WAS ENTERED INTO PROGRAM SWITCHES 5, 6, AND 7.
SEVEN IS AN INVALID ROUTINE NUMBER. PROGRAM RETURNS TO WAIT 1 AFTER
THIS PRINTOUT.

E00D RTN3 TIMER X ILSW WAS ZERO

WHILE CHECKING THE DESIGNATED TIMER, AN INTERRUPT WAS RECEIVED ON
THE TIMER INTERRUPT LEVEL AND THE ILSW WAS BLANK.

E00E RTN1 A REG CHANGED ON TIMR X CS CYCLE

THE CONTENTS OF THE A REGISTER WERE DESTROYED DURING THE DESIGNATED
TIMER CYCLE STEAL CYCLE. THE A REG IS LOADED TO FFFF PRIOR TO
TURNING THE TIMER ON.

E00F RTN6 TIMER X FAILED TO INCREMENT

THE TIMER SPECIFIED FAILED TO INCREMENT WITHIN 70 MSEC. AFTER BEING
TURNED ON. THE TIMERS ARE STORAGE PROTECTED DURING THIS CHECK.

E01D RTN6 SPV INTRPT ON TIMER X CS CYCLE

A STORAGE PROTECT VIOLATE INTERRUPT WAS RECEIVED DURING THE
DESIGNATED TIMER CYCLE STEAL CYCLE. TIMERS ARE STORAGE PROTECTED
DURING THIS CHECK.

E011 RTN6 NO INTRP ON VIOLATE TIMER X

A STORE INSTRUCTION WAS ISSUED TO THE DESIGNATED PROTECTED TIMER.
A STORAGE PROTECT VIOLATE INTERRUPT DID NOT OCCUR.

5. COMMENTS

THE TIMER FUNCTION TEST CONSISTS OF A CONTROL ROUTINE, SIX TEST
ROUTINES, AND A SCOPING ROUTINE.

THE CONTROL ROUTINE DETERMINES THE TIMER INTERRUPT LEVEL AND OUTPUTS
THE INFORMATION FOR OPERATOR OBSERVATION. THE CONTROL ROUTINE ALSO
SEQUENCES THE TESTING ROUTINES AND ACCOMPLISHES THE PROGRAM OPTIONS
SPECIFIED BY THE OPERATOR.

ROUTINE 1 CHECKS FOR DOUBLE INCREMENTING OF THE I COUNTER, AND FOR
A CHANGE IN A REG CONTENTS DURING A TIMER C.S. CYCLE. IF EITHER OF
THESE FAILURES OCCURS, THE ERROR PRINTOUT IS FOLLOWED BY A MESSAGE
INSTRUCTING THE CE TO REPAIR THE FAILURE BEFORE CONTINUING. THIS IS
DONE SINCE EITHER OF THESE FAILURES CAN CAUSE THE PROGRAM TO LOOSE
CONTROL OR INDICATE FALSE ERRORS. IF IT IS DETERMINED BY THE CONTROL
ROUTINE, THAT ANY TIMER FAILS TO INTERRUPT, THEN THAT TIMER(S) WILL
NOT BE CHECKED IN ROUTINE 1.

ROUTINE 2 CHECKS THE ON-OFF ACTION OF ALL THREE TIMERS. EACH TIMER IS
CHECKED 10 TIMES.

ROUTINE 3 CHECKS THE TIMERS FOR INTERRUPT, DSW, AND ILSW.

ROUTINE 4 CHECKS THE TIMERS FOR PROPER STEPPING. EACH TIMER IS
ALLOWED TO STEP 50 TIMES WITH 16 DIFFERENT STARTING COUNTS.

ROUTINE 5 IS A TWO PASS ROUTINE. THE FIRST PASS IS WITH TIMER
INTERRUPT OFF, AND THE SECOND PASS IS TIMER INTERRUPT ON. ALL TIMERS
ARE RUN TOGETHER, AND EACH ONE IS CHECKED FOR PROPER STEPPING FOR
1000 STEPS.

ROUTINE 6 CHECKS THE TIMERS WHILE STORAGE PROTECTED. EACH TIMER IS
CHECKED TO INSURE IT INCREMENTS WHILE STORAGE PROTECTED WITHOUT
CAUSING A STORAGE PROTECT VIOLATE ERROR. THE CHECK IS MADE 10 TIMES
PER TIMER. A FURTHER CHECK IS MADE TO INSURE AN SPV INTERRUPT DOES
OCCUR WHEN TRYING TO STORE INTO A PROTECTED TIMER.

THE SCOPING ROUTINE ALLOWS THE OPERATOR TO SELECT A TIMER (A, B, OR C)
STARTING COUNT, AND THE NUMBER OF STEPS THE TIMER SHOULD BE STEPPED.
AFTER ALL DATA IS ENTERED, AND THE START BUTTON HAS BEEN DEPRESSED,
THE ROUTINE WILL LOOP UNTIL DATA ENTRY SWITCH 2 IS TURNED
ON, AT WHICH POINT THE ROUTINE RETURNS TO WAIT 5. ONLY ONE TIMER
MAY BE RUN AT A TIME. IF A TIMER NUMBER IS NOT ENTERED, TIMER C WILL
BE USED.

```
028C              ABS
                  ORG    /3001                          BB200010
                                                        BB200020
                                                        BB200030
                 *         ** PROGRAM WAITS **          BB200040
                 *                                      BB200050
3001 0  0147      DC     WT1+1     WAIT 1               BB200060
                 *                                      BB200070
                 *       WAIT OCCURS AFTER PROGRAM      BB200080
                 *       HAS LOADED. ENTER PROGRAM      BB200090
                 *       OPTIONS IN DATA ENTRY SWS.     BB200100
                 *       AND DEPRESS START.             BB200110
                 *                                      BB200120
3002 0  0187      DC     WT2+1     WAIT 2               BB200130
                 *                                      BB200140
                 *       PROGRAM RAN TO COMPLETION.     BB200150
                 *       DEPRESSING START RETURNS       BB200160
                 *       PROGRAM TO WAIT 1.             BB200170
                 *                                      BB200180
3003 0  0195      DC     WT3+1     WAIT 3               BB200190
                 *                                      BB200200
                 *       PROGRAM SEQUENCE ERROR.        BB200210
                 *       SUPERVISOR SECTION OF          BB200220
                 *       PROGRAM DECTED AN ERROR        BB200230
                 *       IN ROUTINE SEQUENCING.         BB200240
                 *       DEPRESS START TO RETURN        BB200250
                 *       TO WAIT 1.                     BB200260
                 *                                      BB200270
3004 0  03DD      DC     WT4+1     WAIT 4               BB200280
                 *       TIMER C FAILED TO INTER-       BB200290
                 *       RUPT IN ROUTINE 4.             BB200300
                 *                                      BB200310
3005 0  0460      DC     WT5+1     WAIT 5               BB200320
                 *                                      BB200330
                 *       SCOPE ROUTINE WAIT. ENTER      BB200340
                 *       STARTING TIMER COUNT IN        BB200350
                 *       DATA ENTRY SWITCHES. PUSH      BB200360
                 *       START BUTTON.                  BB200370
                 *                                      BB200380
3006 0  0469      DC     WT6+1     WAIT 6               BB200390
                 *                                      BB200400
                 *       SCOPE ROUTINE WAIT. ENTER      BB200410
                 *       NUMBER OF DESIRED TIMER        BB200420
                 *       STEPS IN DATA ENTRY SWITCH     BB200430
                 *       DEPRESS START BUTTON.          BB200440
                 *                                      BB200450
3007 0  0474      DC     WT7+1     WAIT 7               BB200460
                 *                                      BB200470
                 *       SCOPE ROUTINE WAIT. ENTER      BB200480
                 *       TIMER NUMBER IN DATA ENTRY     BB200490
                 *       SWITCHES.                      BB200500
                 *                                      BB200510
                 *       BIT 4 - TIMER A                BB200520
                 *       BIT 5 - TIMER B                BB200530
                 *       BIT 6 - TIMER C                BB200540
                 *                                      BB200550
                 *       CLEAR ALL UNUSED BIT SWS.      BB200560
                 *       DEPRESS START TO CONTINUE.     BB200570
                 *                                      BB200580
3008 0  01E7      DC     WT8+1     WAIT 8               BB200590
                 *                                      BB200600
                 *       WAIT FOR TIMER INTERRUPT       BB200610
                 *       IN ROUTINE 1.                  BB200620
                 *                                      BB200630
3009 0  0538      DC     WT9+1     WAIT 9               BB200640
                 *                                      BB200650
                 *       HALT ON ERROR REQUESTED.       BB200660
                 *       PUSH START TO CONTINUE.        BB200670
                                                        BB200680
```

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300A 0  0551      DC     WTA+1     WAIT A               BB200690
                 *                                      BB200700
                 *       1443 NOT READY. MAKE READY     BB200710
                 *       AND PUSH START.                BB200720
                 *                                      BB200730
300B 0  0553      DC     WTB+1     WAIT B               BB200740
                 *                                      BB200750
                 *       1443 BUSY. THIS IS AN          BB200760
                 *       ERROR CONDITION. DETERMINE     BB200770
                 *       CAUSE,THEN PUSH START TO       BB200780
                 *       CONTINUE.                      BB200790
                 *                                      BB200800
300C 0  056C      DC     WTC+1     WAIT C               BB200810
                 *                                      BB200820
                 *       1053/1816 NUMBER 1 NOT         BB200830
                 *       READY. MAKE 1053/1816          BB200840
                 *       READY AND DEPRESS START.       BB200850
                 *                                      BB200860
300D 0  064E      DC     WTD+1     WAIT D               BB200870
                 *                                      BB200880
                 *       DSW FAILED TO RESET AFTER      BB200890
                 *       INTERRUPT IN ROUTINE 2.        BB200900
                 *                                      BB200910
300E 0  06D1      DC     WTE+1     WAIT E               BB200920
                 *                                      BB200930
                 *       AN INTERNAL INTERRUPT WAS      BB200940
                 *       RECEIVED. THE I CTR. AT        BB200950
                 *       INTERRUPT IS IN THE Q REG.     BB200960
                 *       THE ILSW IS IN THE A REG.      BB200970
                 *       DEPRESS START BUTTON TO        BB200980
                 *       RESTART THE PROGRAM.           BB200990
                 *                                      BB201000
300F 0  06DC      DC     WTF+1     WAIT F               BB201010
                 *                                      BB201020
                 *       INTERNAL INTERRUPT,OTHER       BB201030
                 *       THAN SPV WAS RECEIVED          BB201040
                 *       DURING ROUTINE 6. I COUNT      BB201050
                 *       IS IN Q REG. ILSW IN A REG     BB201060
                 *       PRESS START TO RESTART         BB201070
                 *       PROGRAM.                       BB201080
                 *                                      BB201090
3010              ORG    300                            BB201100
                                                        BB201110
012C 0  B200      DC     /8200     P1D                  BB201120
                 *         *****************************BB201130
                 *         *                          *BB201140
                 *         *   TIMER FUNCTION TEST    *BB201150
                 *         *      ** TIMFT **         *BB201160
                 *         *                          *BB201170
                 *         *****************************BB201180
                                                        BB201190
                                                        BB201200
012D 0  1010      TISRT  SLA    16                      BB201210
012E 00 D40001B1         STO  L RTNNO   CLR ROUTINE NUMBERBB201220
0130 00 D40003E5         STO  L INTSW   CLEAR INTERRUPT SWBB201230
0132 00 D4000214         STO  L TIMA    *AND INOP INDICATORSBB201240
0134 00 D4000215         STO  L TIMA+1              BB201250
0136 00 D4000216         STO  L TIMA+2              BB201260
0138 00 D4000213         STO  L ERRSW               BB201270
                                                        BB201280
013A 0  611F      CTL01  LDX    1 31                 BB201290
013B 00 D5000003         STO  L1 /0003  CLEAR INTERVAL TIMERBB201300
013D 0  71FF          MDX    1 -1      AND INTERRUPT LOCATNBB201310
013E 0  70FC          MDX    CTL01+1                 BB201320
                 *                                      BB201330
013F 0  C866      LDD    RESRT    SET RESTART INSTRUCNBB201340
0140 00 0C000000         STO  L /0000                 BB201350
                 *                                      BB201360
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0142 0  10A0           SLT     32        CLEAR A AND G            88201370
                *                                                 88201380
0143 0  C05F           LD      CONST+2   SET LEVEL ERROR          88201390
0144 00 04000008       STO  L  /0008     INTERRUPT ADDRESS        88201400
                *                                                 88201410
0146 0  3001   WT1     WAIT    1         OP ENTER CONTROL         88201420
                *                        INFORMATION  PUSH        88201430
                *                        START TO CONTINUE        88201440
                *                                                 88201450
0147 0  0864           XIO     BSW       READ BIT SWITCHES        88201460
0148 0  C067           LD      BSWA                               88201470
0149 0  188B           SRT     11                                 88201480
014A 0  1010           SLA     16                                 88201490
014B 0  1081           SLT     1         SET CORE SPEED           88201500
014C 0  D067           STO     SPEED     *INDICATOR               88201510
014D 0  1084           SLT     4                                  88201520
014E 0  100F           SLA     15                                 88201530
014F 0  D063           STO     OPIND     SET OPT DEVICE INDIC     88201540
0150 00 2C400004       STS  L  4,/40     CLEAR STORAGE            88201550
0152 00 2C400005       STS  L  5,/40     *PROTECT BITS            88201560
0154 00 2C400006       STS  L  6,/40                              88201570
                *                                                 88201580
0156 0  C059           LD      BSWA      SAVE SW INPUT            88201590
0157 0  10C8           SLA     8                                  88201600
0158 00 4C280179       BSC  L  CTL03,+Z  BRNCH IF MANUAL MODE     88201610
                *                                                 88201620
        ************************************************          88201630
0159A 00 440004AD      BSI  L  TIINT     GO DETERMINE TIMER  SRC  88201640
                *                        INTERRUPT LEVEL          88201650
        ************************************************          88201660
                *                                                 88201670
                *                        SET UP INTERRUPT ADDRESSES 88201680
                *                                                 88201690
015C 00 0C00026A       XIO  L  MASK0     MASK INTERRUPT LVLS      88201700
015E 00 0C00026C       XIO  L  MASK1                              88201710
0160 0  621A           LDX   2 26                                 88201720
0161 0  C042           LD      CONST+3   ADDRESS SVINT            88201730
0162 00 06000008       STO  L2 8                                  88201740
0164 0  72FF           MDX   2 -1        . . .  .  .              88201750
0165 0  70FC           MDX     *-4                                88201760
0166 0  0841           XIO     UMSK0     UNMASK INTERRUPTS        88201770
0167 0  0842           XIO     UMSK1                              88201780
                *                                                 88201790
0168 0  0845   RTRN    XIO     SNSWS     CHECK IF A ROUTINE       88201800
0169 0  E038           AND     CONST+1   *IS SPECIFIED TO         88201810
016A 0  1808           SRA     8         *LOOP                    88201820
016B 0  4808           BSC     *         SKIP IF LOOP ROUTINE     88201830
016C 0  7002           MDX     CTL04                              88201840
016D 0  0043           STO     RTNNO     SET IN ROUTINE SW        88201850
016E 0  7006           MDX     CTL02+2   GO EXECUTE ROUTINE       88201860
                *                                                 88201870
016F 0  C041   CTL04   LD      RTNNO     CK IF ALL ROUTINES       88201880
0170 0  9030           S       CONST     HAVE RUN                 88201890
0171 0  4818           BSC     *-                                 88201900
0172 0  700B           MDX     CTL05     BRNCH IF ALL RTN RUN     88201910
                *                                                 88201920
0173 00 740101B1 CTL02 MDX  L  RTNNO,1   ADD 1 TO ROUTINE NO      88201930
0175 C0 658001B1       LDX  I1 RTNNO                              88201940
0177 00 40800195       BSC  I1 RTN-1     EXIT TO ROUTINE          88201950
                *                        MANUAL MODE SELECTED     88201960
        ************************************************          88201970
                *                                                 88201980
0179 00 440005 3C CTL03 BSI L LOG        PRINT MANUAL MODE   SRC  88201990
017B 0  0710           DC      TMM01     SELECTED                 88202000
        ************************************************          88202010
                *                                                 88202020
017C 00 4C000456       BSC  L  TIMAN     GO TO MANUAL ROUTINE     88202030
                *                                                 88202040
```

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                *                        ALL ROUTINES HAVE RUN    88202050
                *                                                 88202060
017E 0  082D   CTL05   XIO     BSW       READ BIT SWITCHES        88202070
017F 0  C030           LD      BSWA      CHECK IF LOOP PRGRM      88202080
0180 0  1804           SRA     4         IS SPECIFIED             88202090
0181 0  4804           BSC     E                                  88202100
0182 0  7005           MDX     LPPGM     BRANCH IF LOOP PGRM      88202110
                *                                                 88202120
        ************************************************          88202130
0183 C0 44C0053C       BSI  L  LOG       PRINT PROGRAM       SRC  88202140
0185 0  072C           DC      TMM03     COMPLETE                 88202150
        ************************************************          88202160
                *                                                 88202170
0186 0  3002   WT2     WAIT    2         PROGRAM COMPLETE         88202180
                *                                                 88202190
0187 0  70A5           MDX     TISRT     PUSHING START RESULT     88202200
                *                        IN BRANCH TO START       88202210
                *                        OF PROGRAM               88202220
                *                                                 88202230
0188 0  1010   LPPGM   SLA     16        CLEAR ROUTINE NUMBER     88202240
0189 0  D027           STO     RTNNO                              88202250
                *                                                 88202260
        ************************************************          88202270
018A 00 4400053C       BSI  L  LOG       PRINT PASS COMPLETE SRC  88202280
018C U  08B6           DC      TMM23                              88202290
        ************************************************          88202300
                *                                                 88202310
018D 0  70E5           MDX     CTL02     LOOP PROGRAM             88202320
                *                                                 88202330
                *                        ROUTINES RETURN HERE     88202340
                *                                                 88202350
018E 0  C023   RTNRT   LD      SEQCK                              88202360
018F 0  4818           BSC     *-                                 88202370
0190 0  70D7           MDX     RTRN      BRANCH ON GOOD CHECK     88202380
                *                                                 88202390
        ************************************************          88202400
0191 00 4400053C       BSI  L  LOG       PRINT SEQUENCE ERROR SRC 88202410
0193 0  073A           DC      TMM04                              88202420
        ************************************************          88202430
                *                                                 88202440
0194 0  3003   WT3     WAIT    3         SEQUENCE ERROR           88202450
                *                                                 88202460
0195 0  7097           MDX     TISRT     PUSH START FOR RESRT     88202470
                *                                                 88202480
                *                        ROUTINE ADDRESSES        88202490
                *                                                 88202500
0196 0  018A   RTN     DC      TIM00     ROUTINE 1                88202510
0197 0  0217           DC      TIM01     ROUTINE 2                88202520
0198 0  0270           DC      TIM02     ROUTINE 3                88202530
0199 0  02E0           DC      TIM03     ROUTINE 4                88202540
019A 0  0355           DC      TIM04     ROUTINE 5                88202550
019B 0  03EB           DC      TIM05     ROUTINE 6                88202560
019C 0  019D           DC      TIKER     ILLEGAL ROUTINE          88202570
                *                                                 88202580
        ************************************************          88202590
019D 00 4400053C TIKER BSI  L  LOG       PRINT ILLEGAL ENTRY SRC  88202600
019F 0  087A           DC      TMM20     MESSAGE ID               88202610
        ************************************************          88202620
                *                                                 88202630
01A0 0  70A5           MDX     WT1                                88202640
                *                                                 88202650
                *                        CONTROL CONSTANTS        88202660
                *                                                 88202670
01A1 0  0006   CONST   DC      6                                  88202680
01A2 0  0700           DC      /0700                              88202690
01A3 0  06C8           DC      ERINT     LVL ERR INTRUPT ADRS     88202700
01A4 0  06DF           DC      SVINT                              88202710
                *                                                 88202720
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```
01A6   0000              BSS  E  0                              88202730
                                                               88202740
01A6 0 4C00      RESRT DC      /4C00      RESTART INSTRUCTION   88202750
01A7 0 0120            DC      TISRT                            88202760
                                                               88202770
01A8 0 0000      UMSKO DC      /0000      UNMASK INTERRUPT      88202780
01A9 0 0480            DC      /0480      IOCC                  88202790
01AA 0 0000      UMSK1 DC      /0000                            88202800
01AB 0 0481            DC      /0481                            88202810
                                                               88202820
01AC 0 01B0      BSW   DC      BSWA       READ BIT SWITCH IOCC  88202830
01AD 0 0240            DC      /0240                            88202840
01AE 0 0000      SNSWS DC      /0000      READ SENSE SW IOCC    88202850
01AF 0 0760            DC      /0760                            88202860
                                                               88202870
01B0 0 0000      BSWA  DC      0          BIT SW READ IN AREA   88202880
01B1 0 0000      RTNNO DC      0          ROUTINE NUMBER        88202890
01B2 0 0000      SEQCK DC      0                                88202900
01B3 0 0000      OPIND DC      0          OUTPUT DEVICE INDCTR  88202910
01B4 0 0000      SPEED DC      0          CORE SPEED INDICATOR  88202920
                                                               88202930
01B5 0 04A4      TIBCN DC      TIMAI                            88202940
01B6 0 2000            DC      /2000                            88202950
01B7 0 3100            DC      /3100      TIMER A               88202960
01B8 0 3200            DC      /3200      TIMER B               88202970
01B9 0 3300            DC      /3300      TIMER C               88202980
                                                               88202990
          ****************************************             88203000
          *                                      *             88203010
          *              ROUTINE NUMBER ONE      *             88203020
          *              CHECK FOR DOUBLE INCR   *             88203030
          *              OF I CTR DURING TIMER   *             88203040
          *              CYCLE STEAL CYCLE       *             88203050
          *                                      *             88203060
          ****************************************             88203060
01BA 00 0C00026A TIM00 XIO  L  MASKO      MASK INTERRUPTS       88203070
01BC 00 0C00026C       XIO  L  MASK1                            88203080
01BE 0 1010            SLA     16         CLEAR ERROR SWITCH    88203090
01BF 0 0053            STO     ERRSW                            88203100
01C0 0 C0F4            LD      TIBCN      SET INTERRUPT         88203110
01C1 00 678C06CA       LDX  I3 INLVL      *TRANSFER VECTOR      88203120
01C3 00 07000000       STO  L3 0                                88203130
01C5 00 6700FFFF       LDX  L3 /FFFF                            88203140
01C7 00 6F000004       STX  L3 4          SET ALL TIMERS TO     88203150
01C9 00 6F000005       STX  L3 5          *FFFF                 88203160
01CB 00 6F000006       STX  L3 6                                88203170
01CD 00 0C0001A8       XIO  L  UMSKO      UNMASK INTERRUPTS     88203180
01CF 0 0B0A            XIO     UMSK1                             88203190
01D0 0 6103            LDX  I3 3          SET TIMER INDEX       88203200
01D1 0 C0E4            LD      TIBCN+1    INITIALIZE IOCC       88203210
01D2 00 D4000500       STO  L  NIOCC                            88203220
01D4 0 7005            MDX     RTN00+5                           88203230
                                                               88203240
01D5 00 C4000500 RTN00 LD   L  NIOCC      MODIFY IOCC FOR       88203250
01D7 0 1001            SLA     1          *NEXT TIMER           88203260
01D8 00 04000500       STO  L  NIOCC                            88203270
01DA 00 C5000186       LD   L1 TIBCN+1    THR NMBR TO MESSAGE   88203280
01DC 00 D400085E       STO  L  TMM18+24                         88203290
                                                               88203300
01DE 00 C5000213 RTN01 LD   L1 TIMA-1     CHECK IF TIMER OPRTV  88203310
01E0 0 4820            BSC     Z          SKIP IF OK            88203320
01E1 0 7016            MDX     RTN05                             88203330
01E2 00 C400026A       LD   L  MASKO      SET A TO FFFF         88203340
01E4 00 0C000500       XIO  L  NIOCC      TURN TIMER ON         88203350
                                                               88203360
01E6 0 3008      MT8   WAIT    8          WAIT FOR INTERRUPT    88203370
                                                               88203380
01E7 0 7008            MDX     RTN02      NORMAL INTRP RETURN   88203390
01E8 00 0C000502       XIO  L  FIOCC      ERROR INTRP RETURN    88203400
```

INTERVAL TIMER FUNCTION TEST

```
01EA 00 74010213       MDX  L  ERRSW,I    SET ERROR INDICATOR   88203410
                                                               88203420
          ****************************************             88203430
01EC 00 44000511       BSI  L  ERROR      PRINT ERROR     SRC   88203440
01EE 0 0846            DC      TMM18      MESSAGE ID            88203450
01EF 0 01DE            DC      RTN01      LOOP ERROR RETURN     88203460
          ****************************************             88203470
                                                               88203480
01F0 00 0C000502 RTN02 XIO  L  FIOCC      TIMERS OFF            88203490
01F2 00 C40004AC       LD   L  ACS        CHECK IF ACCUMULATOR  88203500
01F4 00 F400026A       EOR  L  MASKO      *WAS DESTROYED ON     88203510
01F6 0 4820            BSC     Z          *TIMER C.S.CYCLE      88203520
01F7 0 700F            MDX     RTN04                             88203530
01F8 0 71FF      RTN05 MDX     I -1                              88203540
01F9 0 700B            MDX     RTN00      BRN TO CHECK NXT TMR  88203550
01FA 0 C018            LD      ERRSW                             88203560
01FB 00 4C180202       BSC  L  RTN03,+-    BRANCH IF NO ERROR   88203570
                                                               88203580
          ****************************************             88203590
01FD 00 4400053C       BSI  L  LOG        PRINT FIX COMMAND SRC 88203600
01FF 0 0864            DC      TMM19      MESSAGE ID            88203610
          ****************************************             88203620
                                                               88203630
0200 00 4C000146       BSC  L  WTI                              88203640
                                                               88203650
0202 00 C40001B1 RTN03 LD   L  RTNNO      PREPARE SEQUENCE      88203660
0204 0 E000            EOR     RTO0       *CHECK                 88203670
0205 0 00AC            STO     SEQCK                             88203680
0206 0 70B7            MDX     RTNRT      RETURN TO CONTROL SX  88203690
                                                               88203700
0207 00 C50001B6 RTN04 LD   L1 TIBCN+1    SET TMR NMBR IN MSG   88203710
0209 00 040008BD       STO  L  TMM22+19                         88203720
                                                               88203730
          ****************************************             88203740
020B 00 44000511       BSI  L  ERROR      PRINT A DESTROYED SRC 88203750
020D 0 0890            DC      TMM22                             88203760
020E 0 010E            DC      RTN01                             88203770
          ****************************************             88203780
                                                               88203790
020F 00 74010213       MDX  L  ERRSW,I    SET ERROR SWITCH      88203800
0211 0 70E6            MDX     RTN05                             88203810
                                                               88203820
0212 0 0001      RTO0  DC      1                                88203830
0213 0 0000      ERRSW DC      0          ANY FAILURE SWITCH    88203840
0214 0 0000      TIMA  DC      0          A INOP SW             88203850
0215 0 0000            DC      0          B INOP SW             88203860
0216 0 0000            DC      0          C INOP SW             88203870
                                                               88203880
          ****************************************             88203890
          *                                      *             88203900
          *              ROUTINE NUMBER TWO      *             88203910
          *              CHECK ON/OFF ACTION OF  *             88203910
          *              TIMERS                  *             88203920
          ****************************************             88203930
0217 0 0852      TIM01 XIO     MASKO      MASK ALL INTERRUPTS   88203940
0219 0 0853            XIO     MASK1                             88203950
                                                               88203960
0219 0 1010            SLA     16                               88203970
021A 00 04000004       STO  L  /0004      CLEAR ALL TIMERS      88203980
021C 00 04000005       STO  L  /0005                            88203990
021E 00 04000006       STO  L  /0006                            88204000
                                                               88204010
0220 0 6103            LDX  I3 3          TIMER INDEX           88204020
                                                               88204030
0221 0 C094            LD      TIBCN+1    SET TIMER IOCC        88204040
0222 00 04000500       STO  L  NIOCC                            88204050
                                                               88204060
0224 0 1010      RTN10 SLA     16         CLEAR TIMER COUNT     88204070
0225 0 D048            STO     TMCNT      WORK LOCATION         88204080
```

INTERVAL TIMER FUNCTION TEST

```
0226 0 620A          LDX   2 1C      PASS INDEX             BB204090
                                                            BB204100
0227 00 C5000186     LD    L1 TIBCN+1  SET TIMER NUMBER     BB204120
0229 00 04000784     STO   L TMMOB+11  IN MESSAGE           BB204130
022B 00 0400079A     STO   L TMM09+11                       BB204140
                                                            BB204150
022D 00 0C0005C0 RTN11 XIO  L NIOCC     TURN TIMER ON       BB204160
            ********************************************    BB204170
                                                            BB204180
022F 00 44000504     BSI   L DEL20     GO DELAY        SRC  BB204190
            ********************************************    BB204200
                                                            BB204210
0231 00 0C000502     XIO   L FIOCC     TURN TIMER OFF       BB204220
                                                            BB204230
0233 00 C5000003     LD    L1 /0003    GET TIMER CONTENTS   BB204240
0235 0 F03B          EOR   TMCNT       CHECK IF COUNT CHNGD BB204250
0236 00 4C1B0256     BSC   L RTN12,+-  BRANCH IF ZERO       BB204260
                                                            BB204270
0238 00 C5000003     LD    L1 /0003    SET PRESENT COUNT IN BB204280
023A 0 0033          STO   TMCNT       WORK AREA            BB204290
                                                            BB204300
                                                            BB204310
            ********************************************    BB204320
023B 00 44000504     BSI   L DEL20     GO DELAY        SRC  BB204330
            ********************************************    BB204340
                                                            BB204350
023D 00 C5000003     LD    L1 /0003    GET TIMER CONTENTS   BB204360
023F 0 F02E          EOR   TMCNT       CHECK IF COUNT CHNGD BB204370
0240 00 4C200250     BSC   L RTN13,Z   BRANCH IF NOT ZERO   BB204380
                                                            BB204390
0242 00 C5000003     LD    L1 /0003    SAVE PRESENT COUNT   BB204400
0244 0 0029          STO   TMCNT                            BB204410
                                                            BB204420
0245 0 72FF    RTN15 MDX   2 -1                             BB204430
0246 0 70E6          MDX   RTN11       GO MAKE ANOTHER PASS BB204440
                                                            BB204450
0247 0 71FF          MDX   1 -1                             BB204460
0248 0 701B          MDX   RTN14       SET UP FOR NEXT TIMR BB204470
                                                            BB204480
0249 00 0C0006C8     XIO   L DSW       PREVENT INTERRUPT    BB204490
024B 00 0C0001A8     XIO   L UMSKO     UNMASK INTERRUPTS    BB204500
024D 00 0C0001AA     XIO   L UMSK1                          BB204510
                                                            BB204520
024F 00 C4000181     LD    L RTNND     PREPARE SEQUENCE     BB204530
0251 0 F01D          EOR   RT100       CHECK                BB204540
0252 00 D40001B2     STO   L SEQCK                          BB204550
                                                            BB204560
0254 00 4C00018E     BSC   L RTNRT     RETURN TO CONTROL    BB204570
                                                            BB204580
            ********************************************    BB204590
0256 00 44000511 RTN12 BSI L ERROR     PRINT TIMER FAILED SRC BB204600
0258 0 0779          DC    TMMOB       TO TURN ON           BB204610
0259 0 0220          DC    RTN11       -LOOP-ERROR-RETURN   BB204620
            ********************************************    BB204630
                                                            BB204640
025A 0 080F          XIO   MASKO       REMASK AFTER PRINT   BB204650
025B 0 0810          XIO   MASK1                            BB204660
025C 0 70E8          MDX   RTN15                            BB204670
                                                            BB204680
            ********************************************    BB204690
025D 00 44000511 RTN13 BSI L ERROR     PRINT TIMER FAILED SRC BB204700
025F 0 078F          DC    TMM09       TO TURN /FF          BB204710
0260 0 022D          DC    RTN11       LOOP ERROR RETURN    BB204720
            ********************************************    BB204730
                                                            BB204740
0261 0 0808          XIO   MASKO       REMASK AFTER PRINT   BB204750
0262 0 0809          XIO   MASK1                            BB204760
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0263 0 70E1          MDX   RTN15                            BB204770
                                                            BB204780
0264 00 C4000500 RTN14 LD  L NIOCC     SET IOCC FOR NEXT    BB204790
0266 0 1001          SLA   1           TIMER                BB204800
0267 00 D4000500     STO   L NIOCC                          BB204810
                                                            BB204820
0269 0 70BA          MDX   RTN10       GO CHECK NEXT TIMER  BB204830
                                                            BB204840
                                 CONSTANTS                  BB204850
                                                            BB204860
026A   0000          BSS   E 0                              BB204870
                                                            BB204880
026A 0 FFFF    MASKO DC    /FFFF       MASK INTERRUPT IOCC  BB204890
026B 0 0480          DC    /0480                            BB204900
026C 0 FFFF    MASK1 DC    /FFFF                            BB204910
026D 0 0481          DC    /0481                            BB204920
026E 0 0000    TMCNT DC    0                                BB204930
026F 0 0002    RT100 DC    2                                BB204940
                                                            BB204950
            ********************************************    BB204960
            *               ROUTINE NUMBER THREE      *    BB204970
            *               CHECK TIMER INTERRUPTS     *    BB204980
            *               AND DSW                    *    BB204990
            ********************************************    BB205000
                                                            BB205010
0270 0 C06A    TIM02 LD    RT201       SET TRAP ROUTINE     BB205020
0271 00 67B006CA     LDX   I3 INLVL    ADDRESS IN INTERRUPT BB205030
0273 00 07000000     STO   L3 0        LOCATION             BB205050
                                                            BB205060
0275 0 6103          LDX   1 3         TIMER INDEX          BB205070
                                                            BB205080
0276 00 C4000186     LD    L TIBCN+1   SET TIMER IOCC TO C  BB205080
0278 00 D4000500     STO   L NIOCC                          BB205090
027A 0 7005          MDX   RTN20+5                          BB205100
                                                            BB205110
027B 00 C4000500 RTN20 LD  L NIOCC     SET IOCC FOR NEXT    BB205120
027D 0 1001          SLA   1           TIMER                BB205130
027E 00 D4000500     STO   L NIOCC                          BB205140
                                                            BB205150
0280 00 C5000186     LD    L1 TIBCN+1  SET TIMER NUMBER     BB205160
0282 00 D40007B1     STO   L TMM10+11  IN MESSAGE           BB205170
0284 00 040007C7     STO   L TMM11+11                       BB205180
                                                            BB205190
0286 0 C053    RTN21 LD    RT200       SET TIMER TO FFFF    BB205200
0287 00 05000003     STO   L1 /0003                         BB205210
                                                            BB205220
0289 00 0C000500     XIO   L NIOCC     TURN TIMER ON        BB205230
                                                            BB205240
            ********************************************    BB205250
028B 00 44000504     BSI   L DEL20     GO WAIT FOR INTERUPT SRC BB205260
            ********************************************    BB205270
                                                            BB205280
            *               IF TIMER FAILS TO INTEPUPT      BB205290
            *               CONTINUE FROM THIS POINT        BB205300
                                                            BB205310
028D 00 0C000502     XIO   L FIOCC     TURN TIMER OFF       BB205320
                                                            BB205330
            ********************************************    BB205340
028F 00 44000511     BSI   L ERROR     PRINT TIMER FAILED   BB205350
0291 0 07A6          DC    TMM10       TO INTERRUPT         BB205360
0292 0 0286          DC    RTN21       LOOP ERROR RETURN    BB205370
            ********************************************    BB205380
                                                            BB205390
0293 0 7018          MDX   RTN27       GO CHECK IF DONE     BB205400
                                                            BB205410
                                                            BB205420
            *               INTERRUPT TRAP ROUTINE          BB205430
            *               RETURNS HERE                    BB205440
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0294 00 C4C00653   RTN22 LD   L  TRP02     CHECK IF PROPER DSW    88205450
0296 00 F50002DC         EOR  L1 RT202                            88205460
0298 0  4818            BSC      +-        SKIP IF NOT ZERO       88205470
0299 0  700E            MDX      RTN23     DSW OK CONTINUE        88205480
              *                                                   88205490
              *               WRONG DSW AFTER INTERRUPT           88205500
              *                                                   88205510
029A 00 C4000653        LD   L  TRP02      SET DSW FOR CONVRSN    88205520
029C 00 D4000629        STO  L  HEXWD                             88205530
              *                                                   88205540
              ***********************************************     88205550
029E 00 44000609        BSI  L  HEXCV      CONVERT HEX TO 43 CD SRC 88205560
              ***********************************************     88205570
              *                                                   88205580
02A0 00 CC00062E        LDD  L  HEXCO      ERROR DSW TO MESSAGE   88205590
02A2 00 DC0007CA        STD  L  TMM11+14                          88205600
              *                                                   88205610
              ***********************************************     88205620
02A4 00 44000511        BSI  L  ERROR      PRINT DSW ERROR    SRC 88205630
02A6 0  078C            DC       TMM11                             88205640
02A7 0  0286            DC       RTN21      LOOP ERROR RETURN      88205650
              ***********************************************     88205660
02A8 00 C500064F   RTN23 LD   L1 TRP01-1    CHECK IF TIMER ILSW   88205670
02AA 0  4818            BSC      +-         *IS ZERO               88205680
02AB 0  7025            MDX      RTN26                             88205690
02AC 0  7IFF       RTN27 MDX      1 -1      MAKE ANOTHER PASS IF   88205700
02AD 0  70CD            MDX      RTN20      ALL TIMERS NOT CKD     88205710
              *                                                   88205720
              *               ALL TIMERS CKD  CK ILSW             88205730
              *                                                   88205740
02AE 00 C4000650        LD   L  TRP01      CHECK THAT ALL TIMER   88205750
02B0 00 F4000651        EOR  L  TRP01+1    *ILSW BITS ARE THE     88205760
02B2 00 E4000652        AND  L  TRP01+2    *SAME                  88205770
02B4 0  4818            BSC      +-                                88205780
02B5 0  7014            MDX      RTN25      ILSW OK  EXIT          88205790
              *                                                   88205800
              *               ILSW ERROR                          88205810
              *                                                   88205820
02B6 0  6303            LDX   3 3                                  88205830
02B7 00 C700064F   RTN24 LD   L3 TRP01-1    SET ILSW FOR CONVRSN  88205840
02B9 00 040DC629        STO  L  HEXWD                             88205850
              *                                                   88205860
              ***********************************************     88205870
02BB 00 44000609        BSI  L  HEXCV      CONVERT HEX TO 43 CD SRC 88205880
              ***********************************************     88205890
              *                                                   88205900
02BD 00 CC00062E        LDD  L  HEXCO      SET ILSW IN MESSAGE    88205910
02BF 00 0C00070E        STD  L  TMM12+16                          88205920
02C1 00 C7000186        LD   L3 TIBCN+1    TIMER NMBR TO MESSAG   88205940
02C3 00 040007D9        STO  L  TMM12+11                          88205950
              *                                                   88205960
              ***********************************************     88205970
02C5 00 4400053C        BSI  L  LOG        PRINT ILSW         SRC 88205980
02C7 0  07CE            DC       TMM12                             88205990
              *                                                   88206000
              *                                                   88206010
              *                                                   88206020
02C8 0  73FF            MDX      3 -1                              88206020
02C9 0  70ED            MDX      RTN24                             89206030
              *               ALL TIMERS CHECKED  EXIT            88206040
              *                                                   88206050
02CA 00 C4000181   RTN25 LD   L  RTNNO                            88206060
02CC 0  F00F            EOR      RT202                             88206070
02CD 00 D40001B2        STO  L  SEQCK                             88206080
              *                                                   88206090
02CF 00 4C00018E        BSC  L  RTNRT      RETURN TO CONTROL      88206100
              *                                                   88206110
02D1 00 C5000186   RTN26 LD   L1 TIBCN+1                          88206120
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02D3 00 04000894        STO  L  TMM21+11                          88206130
              *                                                   88206140
              ***********************************************     88206150
02D5 00 44000511        BSI  L  ERROR      PRINT ILSW ZERO    SRC 88206160
02D7 0  0889            DC       TMM21      MESSAGE ID             88206170
02D8 0  0286            DC       RTN21      LOOP ERROR RETURN      88206180
              ***********************************************     88206190
              *                                                   88206200
02D9 0  70D2            MDX      RTN23+4                           88206210
              *                                                   88206220
              *               CONSTANTS                           88206230
              *                                                   88206240
02DA 0  FFFF       RT200 DC       /FFFF                            88206250
02DB 0  0640       RT201 DC       TRAP2      INTERRUPT ADDRESS     88206260
02DC 0  0003       RT202 DC       3                                88206270
02DD 0  8000            DC       /8000      A  DSW                 88206280
02DE 0  4000            DC       /4000      B  DSW                 88206290
02DF 0  2000            DC       /2000      C  DSW                 88206300
              ***********************************************     88206310
              *               ROUTINE FOUR                 *     88206320
              *               CHECK TIMERS FOR             *     88206330
              *               PROPER STEPPING              *     88206340
              ***********************************************     88206350
02E0 00 0C00026A   TIM03 XIO  L  MASK0      MASK INTERRUPTS       88206370
02E2 00 0C00026C        XIO  L  MASK1                             88206380
02E4 00 6103            LDX   1 3           TIMER INDEX           88206400
02E5 00 C40001B6        LD   L  TIBCN+1     IOCC TO TIMER C       88206410
02E7 00 040005D0        STO  L  NIOCC                             88206420
02E9 0  7005            MDX      RTN30+5                           88206430
              *                                                   88206440
02EA 00 C4000500   RTN30 LD   L  NIOCC      SET IOCC FOR NEXT     88206450
02EC 0  1001            SLA      1           TIMER                 88206460
02ED 00 04000500        STO  L  NIOCC                             88206470
02EF 0  6210            LDX   2 16          SET PASS INDEX        88206480
02F0 00 C50001B6        LD   L1 TIBCN+1     SET TIMER NUMBER      88206490
02F2 00 040007ED        STO  L  TMM13+11    IN ERROR MESSAGE      88206500
              *                                                   88206510
02F4 0  6332       RTN31 LDX   3 50         SET STEP INDEX        88206520
02F5 00 C6000344        LD   L2 CTTBL-1     SET STARTING COUNT    88206530
02F7 00 05000003        STO  L1 /0003       *IN TIMER AND IN      88206540
02F9 0  0048            STO      RT300      *CHECK REGISTER       88206550
              *                                                   88206560
02FA 00 0C000500        XIO  L  NIOCC       TURN TIMER ON         88206570
              *                                                   88206580
              *               ** CHECK STEPPING **               88206590
              *                                                   88206600
02FC 00 C5000003   RTN32 LD   L1 /0003      GET TIMER CONTENTS    88206610
02FE 0  9043            S        RT300      *LOOP UNTIL TIMER     88206620
02FF 0  4818            BSC      +-         *AND CHECK REG ARE    88206630
0300 0  70FB            MDX      RTN32      *UNLIKE               88206640
              *                                                   88206650
0301 0  F042            EOR      RT302      CHECK IF DIFF IS 1    88206660
0302 0  4818            BSC      +-                                88206670
0303 0  7026            MDX      RTN33      COUNT OK CONTINUE     88206680
              *                                                   88206690
              *               ** COUNT IN ERROR **               88206700
              *                                                   88206710
0304 00 0C000502        XIO  L  FIOCC       TURN TIMER OFF        88206720
0306 00 0C0006C8        XIO  L  DSW         RESET DSW AVOID INTP  88206730
              *                                                   88206740
0308 0  C039            LD       RT300      CONVERT EXPECTED      88206750
0309 0  803A            A        RT302      *COUNT                88206760
030A 00 D4000629        STO  L  HEXWD                             88206770
              *                                                   88206780
              ***********************************************     88206790
030C 00 44000609        BSI  L  HEXCV       GO CONVERT WORD   SRC 88206800
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                    ..........................................  8B206810
030E 00 CC00062E    LDD  L  HEXCD      SET EXPECTED COUNT      8B206820
0310 00 DC0007F8    STD  L  TMM13+22   IN MESSAGE             8B206830
                                                              8B206840
0312 00 C5000003    LD   L1 /0003      CONVERT ACTUAL         8B206850
0314 00 04000629    STO  L  HEXWO      COUNT TO 1443 HEX      8B206860
    .                                                         8B206870
                    ..........................................  8B206880
0316 00 44000609    BSI  L  HEXCV      GO CONVERT WORD   SRC  8B206890
                    ..........................................  8B206900
                                                              8B206910
0318 00 CC00062E    LDD  L  HEXCD      SET ACTUAL COUNT       8B206920
031A 00 DC0007F0    STO  L  TMM13+14   IN MESSAGE             8B206930
                                                              8B206940
                                                              8B206950
                    ..........................................  8B206960
031C 00 44000511    BSI  L  ERROR      GO PRINT COUNT ERROR SRC 8B206970
031E 0  07E2        DC      TMM13                             8B206980
031F 0  02F4        DC      RTN31      LOOP ERROR ADDRESS     8B206990
                    ..........................................  8B207000
0320 00 0C00026A    XIO  L  MASKO      REMASK AFTER PRINT     8B207010
0322 00 0C00026C    XIO  L  MASK1                             8B207020
                                                              8B207030
0324 00 C5000003    LD   L1 /0003      SET PRESENT TIMER      8B207040
0326 0  D018        STO     RT300      *COUNT IN CHECK REG    8B207050
                                                              8B207060
0327 00 0C000500    XIO  L  NIOCC      TURN TIMER ON          8B207070
0329 0  7002        MDX     RTN33+2                           8B207080
                                                              8B207090
                    ** CHECK STEP,PASS AND **                 8B207100
                    ** TIMER INDEX FOR RTN **                 8B20711C
                    ** COMPLETE           **                  8B207120
                                                              8B207130
032A 00 74010342    RTN33 MDX L RT300,I  CHECK REG TO NEXT CT 8B207140
032C 0  1000        NOP                                       8B207150
032D 0  73FF        MDX     3 -1                              8B207160
032E 0  70CD        MDX     RTN32      BRNCH NOT 50 STEPS     8B207170
032F 0  72FF        MDX     2 -1                              8B20718D
0330 0  70C3        MDX     RTN31      BRNCH NOT 16 PASSES    8B207190
0331 00 0C000502    XIO  L  FIOCC      TURN TIMER OFF         8B207210
                                                              8B207220
0333 0  71FF        MDX     1 -1                              8B207230
0334 0  70B5        MDX     RTN30      BRNCH NOT ALL TIMRS    8B207240
                                                              8B207250
                    ROUTINE COMPLETE                          8B207260
                                                              8B207270
0335 00 C40001B1    LD   L  RTNNO      PREPARE SEQUENCE       8B207280
0337 0  F00B        EOR     RT301      CHECK                  8B207290
0338 00 040001B2    STO  L  SEQCK                             8B207300
                                                              8B207310
033A 00 0C0006C8    XIO  L  DSW        PREVENT INTERRUPT      8B207320
033C 00 0C0001A8    XIO  L  UMSKO      UNMASK INTERRUPTS      8B207330
033E 00 0C0001AA    XIO  L  UMSK1                             8B207340
                                                              8B207350
0340 00 4CD0018E    BSC  L  RTNRT      RETURN TO CONTROL      8B207360
                                                              8B207370
                    CONSTANTS                                 8B207380
                                                              8B207390
0342 0  0000        RT300 DC   0                              8B207400
0343 0  0004        RT301 DC   4                              8B207410
0344 0  0001        RT302 DC   1                              8B207420
                                                              8B207430
                    TIMER STARTING COUNT TABL                 8B207440
                                                              8B207450
0345 0  FFFF        CTTBL DC   /FFFF                          8B207460
0346 0  FFF0        DC        /FFF0                           8B207470
                                                              8B207480
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0347 0  FFOF        OC      /FFOF                             8B207490
0348 0  FF00        DC      /FF00                             8B207500
0349 D  FOFF        DC      /FOFF                             8B207510
034A 0  FOF0        OC      /FOF0                             8B207520
034B 0  F00F        DC      /F00F                             8B207530
034C 0  F000        DC      /F000                             8B207540
034D 0  0FFF        DC      /0FFF                             8B207550
034E 0  0FF0        DC      /0FF0                             8B207560
034F 0  0F0F        DC      /0F0F                             8B207570
0350 0  0F00        DC      /0F00                             8B207580
0351 0  00FF        DC      /00FF                             8B207590
0352 0  00F0        DC      /00F0                             8B207600
0353 0  000F        DC      /000F                             8B207610
0354 0  0000        DC      /0000                             8B207620
                                                              8B207630
                                                              8B207640
                    ..........................................  8B207650
                    ROUTINE NUMBER FIVE                       8B207660
                    CHECK TIMERS WHILE STEP- *                8B207670
                    ING TOGETHER,AND WHILE   *                8B207680
                    IN INTERRUPT MODE        *                8B207690
                    ..........................................  8B207700
                                                              8B207710
0355 00 67B006CA    TIM04 LDX I3 INLVL  SET TIMER INTERRUPT   8B207720
0357 00 C40003DE    LD   L  RT400      LEVEL                  8B207730
0359 00 0700000D    STO  L3 0                                 8B207740
035B 0  1010        SLA     16         CLEAR INTERRUPT PASS   8B207750
035C 00 040003E5    STO  L  INTSW      *INDICATOR             8B207760
035E 00 C400030F    LD   L  RT401      SET PASS I IN ERROR    8B207770
0360 00 D4000813    STO  L  TMM14+23   *MESSAGE               8B207780
                                                              8B207790
0362 00 0C00026A    XIO  L  MASKO      MASK INTERRUPTS FOR    8B207800
0364 00 0C00026C    XIO  L  MASK1      *1ST PASS              8B207810
                                                              8B207820
0366 0  6103        RTN40 LDX I3       SET TIMER INDEX        8B207830
0367 00 C40004F0    LD   L  TII03      SET IOCC TO ALL THRS   8B207840
0369 00 04000500    STO  L  NIOCC                             8B207850
                                                              8B207860
036B 00 C50001B6    LD   LI TIBCN+I    TIMER NUMBER TO        8B207870
036D 00 D4000805    STO  L  TMM14+9    *ERROR MESSAGE         8B207880
                                                              8B207890
036F 00 660003E8    RTN41 LDX L2 /03E8 SET STEP INDEX 1000    8B207900
0371 0  C070        LD      RT404      SET ALL TIMERS AND     8B207910
0372 0  D06E        STO     RT403      *THE CHECK REGISTER    8B207920
0373 0  6303        LDX     3 3        *TO HEX FE0B           8B207930
0374 00 07000003    STO  L3 3                                 8B207940
0376 0  73FF        MDX     3 -1                              8B207950
0377 0  70FC        MDX     *-4                               8B207960
                                                              8B207970
0378 00 0C000500    XIO  L  NIOCC      TURN ALL TIMERS ON     8B207980
                                                              8B207990
037A 00 C5000003    RTN42 LD  L1 3     GET TIMER CONTENTS     8B208000
037C 0  9064        S       RT403      *LOOP UNTIL TIMER      8B208010
037D 0  4818        BSC     +-         *AND CHECK REG ARE     8B208020
037E 0  70F8        MDX     RTN42      *UNLIKE                8B208030
                                                              8B208040
037F 0  F064        EOR     RT406      CHECK IF DIFF IS 1     8B208050
0380 0  4818        BSC     +-                                8B208060
0381 0  702C        MDX     RTN43      COUNT OK CONTINUE      8B208070
                                                              8B208080
                    ** COUNT IN ERROR **                      8B208090
                                                              8B208100
0382 00 0C000502    XIO  L  FIOCC      TURN TIMERS OFF        8B208110
0384 0  C060        LD      INTSW                             8B208120
0385 00 4C200389    BSC  L  *+2,Z                             8B208130
0387 00 0C0006C8    XIO  L  DSW        RESET DSW IF 1ST PAS   8B208140
                                                              8B208150
                                                              8B208160
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INTERVAL TIMER FUNCTION TEST

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0389 0 C057        LD   RT403     CONVERT EXPECTED       8B208170
038A 0 8059        A    RT406     *COUNT                 8B208180
038B 00 04000629   STO L HEXWD                           8B208190
                                                         8B208200
*...................................................     8B208210
0380 00 44000609   BSI L HEXCV    GO CONVERT        SRC  8B208220
*...................................................     8B208230
                                                         8B208240
038F 00 CC00062E   LOD L HEXCD    EXPECTED WORD TO ERR   8B208240
0391 00 DC00080E   STO L TMM14+18 MESSAGE                8B208250
                                                         8B208260
0393 00 C5000003   LD   L1 /0003  ACTUAL COUNT TO        8B208270
0395 00 04000629   STO L HEXWD    CONVERT                8B208280
                                                         8B208290
*...................................................     8B208300
0397 00 44000609   BSI L HEXCV    GO CONVERT        SRC  8B208310
*...................................................     8B208320
                                                         8B208330
0399 00 CC00062E   LOD L HEXCD    ACTUAL COUNT TO ERR    8B208340
039B 00 0C000808   STO L TMM14+12 MESSAGE                8B208350
                                                         8B208360
*...................................................     8B208370
039D 00 44000511   BSI L ERROR    PRINT ERROR       SRC  8B208380
039F 0 07FC        OC   TMM14                            8B208390
03A0 0 036F        OC   RTN41     LOOP ERROR ADDRESS     8B208400
*...................................................     8B208410
                                                         8B208420
03A1 00 C5000003   LD   L1 3      SET PRESENT TIMER      8B208430
03A3 0 003D        STO  RT403     *CNT IN CHECK REG      8B208440
                                                         8B208450
03A4 0 C040        LD   INTSW                            8B208460
03A5 00 4C2003AB   BSC L *+4,Z                           8B208470
03A7 00 0C00026A   XIO L MASKO    REMASK AFTER PRINT     8B208480
03A9 00 0C00026C   XIO L MASK1    *ON 1ST PASS           8B208490
                                                         8B208500
03AB 00 0C000500   XIO L NIOCC    TURN TIMERS ON         8B208510
03AD 0 7002        MDX  RTN43+2                           8B208520
                                                         8B208530
03AE 0 740103E1 RTN43 MDX L RT403,1 SET CHECK REG FOR    8B208540
03B0 0 1000        NOP            *NEXT COUNT             8B208550
03B1 0 72FF        MDX  2 -1                              8B208560
03B2 0 70C7        MDX  RTN42     BRNCH NOT 1000 STEPS    8B208570
                                                         8B208580
03B3 00 0C000502   XIO L FIOCC    TURN TIMERS OFF        8B208590
                                                         8B208600
03B5 0 7IFF        MDX  1 -1                              8B208610
03B6 0 7084        MDX  RTN41-4   BRANCH NOT ALL TIMRS   8B208620
                                                         8B208630
03B7 0 C02D        LD   INTSW                            8B208640
03BB 0 4820        BSC  Z         SKIP IF 1ST PASS       8B208650
03B9 0 7019        MDX  RTN44     BRNCH IF INT PASS      8B208660
                                                         8B208670
03BA 00 0C0006C8   XIO L DSW                             8B208680
03BC 00 0C0001A8   XIO L UMSKO    UNMASK INTERRUPT       8B208690
03BE 00 0C0001AA   XIO L UMSK1    LEVELS                 8B208700
03C0 00 740103E5   MDX L INTSW,1  INDICATE INT PASS      8B208710
03C2 0 C010        LD   RT402     SET PASS 2 IN ERROR    8B208720
03C3 00 04000813   STO L TMM14+23 *MESSAGE               8B208730
03C5 00 C4000186   LD   L TIBCN+1 SET TIMER C IOCC       8B208740
03C7 00 04000500   STO L NIOCC                           8B208750
03C9 00 6700FFFF   LDX L3 /FFFF   GET TIMER INTERRUPT    8B208760
03CB 00 6F000006   STX L3 6       LEVEL SET              8B208770
                                                         8B208780
03CD 00 0C000500   XIO L NIOCC    TIMER ON FOR INTRPT    8B208790
                                                         8B208800
03CF 0 3004  WT4   WAIT 4         WAIT FOR INTERRUPT     8B208810
                                                         8B208820
03D0 00 0C000502   XIO L FIOCC    TURN TIMER OFF         8B208830
                                                         8B208840
```

INTERVAL TIMER FUNCTION TEST

```
0302 0 7093        MDX  RTN40     RERUN ROUTINE          8B208850
                                                         8B208860
           ** ROUTINE COMPLETE **                        8B208870
                                                         8B208880
03D3 00 0C0006C8 RTN44 XIO L DSW    RESET DSW            8B208890
03D5 00 4C400307   BOSC L *        TURN INTERRUPT OFF    8B208910
03D7 00 C40001B1   LD   L RTNNO    PREPARE SEQUENCE      8B208920
03D9 0 F009        EOR  RT405      *CHECK                8B208930
03DA 00 040001B2   STO L SEQCK                           8B208940
                                                         8B208950
03DC 00 4C00018E   BSC L RTNRT     RETURN TO CONTROL     8B208960
                                                         8B208970
           CONSTANTS                                     8B208980
                                                         8B208990
030E 0 03E6   RT400 DC  TRA4A      TIMER LEVEL           8B209000
03DF 0 0100   RT401 DC  /0100      43 CODED 1            8B209010
03E0 0 0200   RT402 DC  /0200      43 CODED 2            8B209020
03E1 0 0000   RT403 DC  0                                8B209030
03E2 0 FE0B   RT404 DC  /FE0B      TIMER STARTING COUNT  8B209040
03E3 0 0005   RT405 DC  5                                8B209050
03E4 0 0001   RT406 DC  1                                8B209060
03E5 0 0000   INTSW DC  0          INTERRUPT SWITCH      8B209070
                                                         8B209080
03E6 0 0000   TRA4A DC  0          TIMER TRAP ROUTINE    8B209090
03E7 00 0C0005C6   XIO L 1LSW                            8B209100
03E9 00 4CB003E6   BSC I TRA4A                           8B209110
                                                         8B209120
*...................................................     8B209130
           ROUTINE SIX                                   8B209140
           CHECK STORAGE PRO-                            8B209150
           TECTED TIMERS                                 8B209160
*...................................................     8B209170
                                                         8B209180
03EB 00 67000603 TIM05 LDX L3 SPVTP LOAD TRAP ADDRESS    8B209190
03ED 00 6F000008   STX L3 8                              8B209200
03EF 00 670004A4   LDX L3 TIMAI                          8B209210
03F1 00 6F8006CA   STX I3 INLVL    ...                   8B209220
03F3 0 6103        LDX  1 3                              8B209230
03F4 0 1010        SLA  16         SET TIMER INDEX -     8B209240
03F5 0 005E        STO  SPVCK      CLEAR ALL TIMERS      8B209250
03F6 00 04000004   STO L 4         *AND VIOLATE SWITCH   8B209260
03F8 00 04000005   STO L 5                               8B209270
03FA 00 D4000006   STO L 6                               8B209280
03FC 00 2C410004   STS L 4,/41                           8B209290
03FE 00 2C410005   STS L 5,/41     STORAGE PROTECT ALL   8B209300
0400 00 2C41D006   STS L 6,/41     *TIMERS               8B209310
0402 00 C4000186   LD   L TIBCN+1  INITIALIZE TIMER      8B209320
0404 00 04000500   STO L NIOCC     *IOCC                 8B209330
0406 0 7005        MDX  RTN50+5                            8B209340
                                                         8B209350
0407 00 C4000500 RTN50 LD L NIOCC  MODIFY IOCC FOR       8B209360
0409 0 1001        SLA  1          *NEXT TIMER           8B209370
040A 00 04000500   STO L NIOCC                           8B209380
040C 0 1010        SLA  16         CLEAR INCREMENT       8B209390
040D 0 0047        STO  INCCT      *SWITCH               8B209400
040E 0 620A        LDX  2 10       SET PASS INDEX        8B209410
040F 00 C5000186   LD   L1 TIBCN+1 SET TIMER NUMBER IN   8B209420
0411 00 04000BCE   STO L TMM24+11  *MESSAGES             8B209430
0413 00 D4000BEC   STO L TMM25+18                        8B209440
                                                         8B209450
0415 00 0C000500 RTN51 XIO L NIOCC TURN TIMER ON         8B209460
0417 00 44000504   BSI L DEL20     ALLOW FOR INCREMENT SRC 8B209470
0419 00 0C000502   XIO L FIOCC     TURN TIMER OFF        8B209480
                                                         8B209490
041B 00 C5000003   LD   L1 3       CHECK IF TIMER        8B209500
041D 0 F037        EOR  INCCT      *INCREMENTED          8B209510
                                                         8B209520
```

INTERVAL TIMER FUNCTION TEST

```
041E 0  4820          BSC    Z                                    BB209530
041F 0  7004          MDX    RTN52       OK CONTINUE              BB209540
                *                                                 BB209550
                ***************************************           BB209560
0420 00 44000511      BSI  L ERROR       PRINT ERROR        SRC  BB209570
0422 0  08C3          DC     TMM24                                BB209580
0423 0  0415          DC     RTN51       LOOP ERROR RETURN        BB209590
                ***************************************           BB209600
                *                                                 BB209610
0424 00 C5000003 RTN52 LD   L1 3         MODIFY INCREMENT         BB209620
0426 0  002E          STO    INCCT       *SWITCH                  BB209630
0427 0  72FF          MDX    2 -1        SKIP IF 10 PASSES        BB209640
0428 0  7CEC          MDX    RTN51                                BB209650
0429 0  71FF          MDX    1 -1        SKIP IF LAST TIMER       BB209660
042A 0  70DC          MDX    RTN50       GO CK NEXT TIMER         BB209670
                *                                                 BB20968D
                *             VIOLATE PROTECTED TIMERS            BB209690
                *                                                 BB209700
042B 00 74010454      MDX  L SPVCK,1     SET CHECK SWITCH         BB209710
042D 0  610J          LDX    1 3         SET TIMER INDEX          BB209720
042E 00 C5000186 RTN53 LD   L1 TI8CN+1   SET TIMER NUMBER         BB209730
0430 00 D4000907      STO  L TMM26+21    *IN MESSAGE              BB209740
                *                                                 BB209750
0432 00 D5000003      STO  L1 3          VIOLATE TIMER            BB209760
                *                                                 BB209770
                ***************************************           BB209780
0434 00 44000511      BSI  L ERROR       PRINT INTRP FAILED  SRC BB209790
0436 0  08F2          DC     TMM26                                BB209800
0437 0  042E          DC     RTN53       LOOP ERROR RETURN        BB209810
                ***************************************           BB209820
                *                                                 BB209830
0438 0  71FF     RTN54 MDX    1 -1        SKIP IF ALL TIMERS      BB209840
0439 0  70F4          MDX    RTN53       *CHECKED                 BB209850
                *                                                 BB209860
043A 00 670006CB      LDX  L3 ERINT      RESTORE INTERRUPT        BB209870
043C 00 6F000008      STX  L3 8          *VECTOR                  BB209880
043E 00 C40001B1      LD   L RTNNO       PREPARE SEQUENCE         BB209890
0440 0  F012          EOR    RT500       *CHECK                   BB209900
0441 00 040001B2      STO  L SEQCK                                BB209910
0443 00 2C400004      STS  L 4,/40       CLEAR PROTECTED          BB209920
0445 00 2C400005      STS  L 5,/40       *TIMERS                  BB209930
0447 00 2C400006      STS  L 6,/40                                BB209940
0449 00 4C00018E      BSC  L RTNRT       RETURN TO CONTROL        BB209950
                *                                                 BB20996D
                *             INTERRUPT RETURN                    BB209970
                *                                                 BB209980
0448 0  C008     RTN55 LD     SPVCK       CHECK IF SPV PASS       BB209990
044C 0  4820          BSC    Z           SKIP IF ERROR           BB210000
044D 0  70EA          MDX    RTN54                                BB210010
                *                                                 BB210020
                ***************************************           BB210030
044E 00 44000511      BSI  L ERROR       PRINT ERROR        SRC  BB210040
0450 0  08DA          DC     TMM25                                BB210050
0451 0  042E          DC     RTN53       LOOP ERROR RETURN        BB210060
                ***************************************           BB210070
                *                                                 BB210080
0452 0  7001          MDX    RTN52                                BB210090
                *                                                 BB210100
                *             CONSTANTS                           BB210110
                *                                                 BB210120
0453 0  0006     RT500 DC     6           CONSTANT 6              BB210130
0454 0  0000     SPVCK DC     0           SPV CK SWITCH           BB210140
0455 0  0000     INCCT DC     0           INCREMENT SWITCH        BB210150
                *                                                 BB210160
                ***************************************           BB210170
                *             SCOPING ROUTINE                     BB210180
                ***************************************           BB210190
                                                                  BB210200
```

INTERVAL TIMER FUNCTION TEST

```
0456 0  631B     TIMAN LDX    3 27                           SE  88210210
0457 0  C042          LD     TIX01                               88210220
0458 00 D7000007 TIMAA STO  L3 7         SET ALL INTRS FOR       88210230
045A 0  73FF          MDX    3 -1        *RETURN TO MANUAL       88210240
045B 0  70FC          MDX    TIMAA       *ROUTINE                88210250
                *                                                88210260
                *             REQUEST SW ENTRY FOR START         88210270
                *             TIME CT                            88210280
                *                                                88210290
045C 00 4400053C      BSI  L LOG         GO PRINT REQUEST   SRC  88210300
045E 0  0815          DC     TMM15       ADRS OF MSG             88210310
045F 0  3005     WT5  WAIT   5                                   88210320
0460 00 0C0001AC      XIO  L BSW         READ BIT SWITCHS        88210330
0462 00 C4000180      LD   L BSWA        GET BIT SWITCHS         88210340
0464 0  D036          STO    TIX02                               88210350
                *                                                88210360
                *             REQUEST SW ENTRY FOR               88210370
                *             NUMBER OF STEPS                    88210380
                *                                                88210390
0465 00 4400053C TIMA8 BSI  L LOG         GO PRINT REQUEST   SRC 88210400
0467 0  0825          DC     TMM16       ADRS OF MSG             88210410
0468 0  3006     WT6  WAIT   6                                   88210420
0469 00 0C0001AC      XIO  L BSW         READ BIT SWS            88210430
046B 00 C4000180      LD   L BSWA        GET BIT SWS             88210440
046D 0  002E          STO    TIX03                               88210450
046E 0  4818          BSC    +-          WAS ENTRY ZERO          88210460
046F 0  70F5          MDX    TIMA8       YES-REQ AGAIN           88210470
                *                                                88210480
                *             REQUEST SW ENTRY FOR TIMER         88210490
                *                                                88210500
0470 00 4400053C      BSI  L LOG         GO PRINT REQUEST   SRC  88210510
0472 0  0836          DC     TMM17       ADRS OF MSG             88210520
0473 0  3007     WT7  WAIT   7                                   88210530
0474 00 0C0001AC      XIO  L BSW         READ BIT SWS            88210540
0476 00 C4000180      LD   L BSWA        GET BIT SWS             88210550
0478 0  E029          AND    TIX07       SAVE BITS 4 5 AND 6     88210560
0479 0  180A          SRA    10          SET UP TIMER INDEX      88210570
047A 0  F028          EOR    TIX08                               88210580
047B 0  0021          STO    TIX04                               88210590
                *                                                88210600
                *             SET UP TIMER TO DESIRED            88210610
                *             VALUE                              88210620
047C 0  C020     TIMAL LD     TIX04       GET TIMER ENTRY        88210630
047D 0  0001          STO    TIMAC+1                             88210640
047E 00 67000000 TIMAC LDX  L3 0         IX 3 = TIMER           88210650
0480 0  C01A          LD     TIX02       GET STARTING COUNT      88210660
0481 00 D7000003      STO  L3 3         SET IN TIMER            88210670
0483 0  8018          A      TIX03       ADD DESIRED COUNTS      88210680
0484 0  0019          STO    TIX05       SAVE                    88210690
                *                                                88210700
                *             TURN ON TIMER FOR DESIRED          88210710
                *             NUMBER OF COUNTS                   88210720
                *                                                88210730
C4B5 00 C700049E      LD   L3 TIX06-1    GET TURN ON CONSTANT    88210740
0487 00 D4000500      STO  L NIOCC       SET IN IOCC            88210750
0489 00 0C000500      XIO  L NIOCC       TURN ON TIMER          88210760
                *                                                88210770
                *             CK TIMER FOR COUNT                 88210780
                *                                                88210790
048B 00 C7000003 TIMAD LD   L3 3         GET COUNTER CONTENTS    88210800
048D 0  9010          S      TIX05       SUB START + NO CNTS     88210810
048E 0  4820          BSC    Z           SKIP = DESIRED COUNT    88210820
048F 0  70FB          MDX    TIMAD       LOOP                    88210830
                *                                                88210840
                *             GOT DESIRED CT                     88210850
                *                                                88210860
0490 00 0C000502      XIO  L FIOCC       TURN OFF CTR           88210870
                *                                                88210880
```

INTERVAL TIMER FUNCTION TEST

```
0492 00 0C0001AC          XIO  L  BSW      CHECK IF OPERATOR        8B210890
0494 00 C40001B0          LD   L  BSWA     *DESIRES TO CHANGE       8B210900
0496 0  1002              SLA     2        *ENTRIES                 8B210910
0497 0  4BI0              BSC     -                                 8B210920
0498 0  70E3              MOX     TIMAL    LOOP PRESENT SETUP       8B210930
0499 0  70BC              MDX     TIMAN    GO CHANGE ENTRIES        8B210940
                     *                                              8B210950
                     *             CONSTANTS                        8B210960
                     *                                              8B210970
049A 0  04A4     TIX01 OC    TIMAI    INTERRUPT ADRS               8B210980
049B 0  CC00     TIX02 OC    0        STARTIG CT STORAGE           8B210990
049C 0  0000     TIX03 OC    0        NUMBER STEPS STORAGE         8B211000
049D 0  0000     TIX04 DC    0        TIMER STORAGE                8B211010
049E 0  0000     TIX05 OC    0        START CT + NO. STEPS         8B211020
049F 0  8000     TIX06 DC    /8000    TURN ON TIMER A              8B211030
04A0 0  4000           DC    /4000    TURN ON TIMER B              8B211040
04A1 0  2000           DC    /2000    TURN ON TIMER C              8B211050
04A2 0  0E00     TIX07 DC    /0E00                                 8B211060
04A3 0  0003     TIX08 DC    /0003                                 8B211070
                     *                                              8B211080
                     *             INTERRUPT ROUTINE               8B211090
                     *                                          IE  8B211100
04A4 0  0000     TIMAI DC    0                                      8B211110
04A5 0  0006           STO   ACS      SAVE ACCUMULATOR            8B211120
04A6 00 0C0006C6        XIO  L  ILSW    SENSE ILSW                 8B211130
04AB 00 0C0006C8        XIO  L  OSW     SENSE DSW-RESET            8B211140
04AA 00 4CC004A4        BOSC I  TIMAI   EXIT                       8B211150
04AC 0  0000     ACS   DC    0        ACCUMULATOR SAVE             8B211160
                     *                                              8B211170
                     *             ROUTINE TO DETERMINE TIMER      8B211180
                     *             INTERRUPT LEVEL                 8B211190
                     *                                              8B211200
04AD 0  0000     TIINT OC    0                               SE    8B211210
04AE 0  6100           LOX   1 0      LOAD INTERRUPT TRAP          8B211220
04AF 0  6218           LOX   2 24     ADDRESSES                    8B211230
04B0 0  C049           LD    TII00    ADDRESS INTRP                8B211240
04BI 00 D50000GB        STO  L1 /0008                             8B211250
04B3 0  B047           A     TIIO1    BUMP ADDRESS BY 4            8B211260
04B4 0  7101           MOX   1 1                                   8B211270
04B5 0  72FF           MOX   2 -1                                  8B211280
04B6 0  70FA           MDX   TIINT+4                               8B211290
                     *                                              8B211300
04B7 0  6303           LOX   3 3                                   8B211310
04B8 0  C045           LO    TIIO4    SET ALL TIMERS TO            8B211320
04B9 00 D7000003        STO  L3 /0003   FFFF                       8B211330
04BB 0  73FF           MOX   3 -1                                  8B211340
04BC 0  70FC           MOX   *-4                                   8B211350
04BD 0  6103           LOX   1 3      SET TIMER INDEX              8B211360
                     *                                              8B211370
04BE 0  C030           LD    TIIO2    SET TIMER IOCC               8B211380
04BF 0  D040           STO   NIOCC                                 8B211390
04C0 00 0C0001A8        XIO  L  UMSKO   UNMASK INTERRUPTS          8B211400
04C2 00 0C0001AA        XIO  L  UMSK1                             8B211410
                     *                                              8B211420
04C4 0  083B     TIIN1 XIO   NIOCC    START TIMER                  8B211430
                     *                                              8B211440
                     **********************************************  8B211450
04C5 0  403E           BSI     DEL20    GO DELAY 20 MILLISEC SRC   8B211460
                     **********************************************  8B211470
                     *                                              8B211480
                     *             IF TIMER FAILS TO INTERRUP      8B211490
                     *             CONTINUE FROM THIS POINT        8B211500
                     *                                              8B211510
04C6 0  083B           XIO     FIOCC    TURN TIMER OFF             8B211520
04C7 00 C4000212        LO   L  RT00                              8B211530
04C9 0D 05000213        STO  L1 TIMA-1  SET THR INOP SW           8B211540
                     *                                              8B211550
04CB 0  C034     TIIN5 LD    NIOCC                                8B211560
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```
04CC 0  1001              SLA     1        SET IOCC FOR NEXT       8B211570
04CD 0  D032              STO     NIOCC    TIMER                   8B211580
04CE 0  71FF              MUX     1 -1                             8B211590
04CF 0  70F4              MOX     TIIN1    TRY NEXT TIMER          8B211600
                     *                                              8B211610
                     *             ALL TIMERS FAILEO TO           8B211620
                     *             INTERRUPT CHECK IF TIMERS      8B211630
                     *             WILL STEP                      8B211640
                     *                                              8B211650
04D0 00 C40003E5     TIIN2 LD  L  INTSW    BYPASS STEP CK IF       8B211660
04D2 00 4C2004F5           BSC L  TIIN6,Z  *ANY TMR INTERRUPTED    8B211670
04D4 0  C026              LD      TIIO3    SET IOCC TO TURN ON     8B211680
04D5 0  002A              STO     NIOCC    ALL TIMERS              8B211690
                     *                                              8B211700
04D6 0  1F10              SLA     16       CLEAR TIMERS            8B211710
04D7 00 C4000004          STO  L  /0004                           8B211720
04D9 00 04000005          STO  L  /0C05                           8B211730
04DB 00 04000006          STD  L  /0006                           8B211740
                     *                                              8B211750
04DD 0  0822              XIO     NIOCC    TURN ALL TIMERS ON      8B211760
                     *                                              8B211770
                     **********************************************  8B211780
040E 0  4025              BSI     DEL20    GO DELAY            SRC 8B211790
                     **********************************************  8B211800
                     *                                              8B211810
040F 0  0822              XIO     FIOCC    TURN ALL TIMERS OFF     8B211820
                     *                                              8B211830
                     *             CHECK TO SEE IF ANY TIMER      8B211840
                     *             STEPPED                        8B211850
                     *                                              8B211860
                     *                                              8B211870
04E0 0  6303              LDX   3 3                                8B211880
04E1 00 C7000003          LD    L3 /0003                          8B211890
04E3 00 4C2004F0          BSC  L  TIIN3,Z  BRNCH IF TIMER STEPO    8B211900
04E5 0  73FF              MOX   3 -1                               8B211910
04E6 0  70FA              MDX     *-6                              8B211920
                     *                                              8B211930
                     *             ALL TIMERS FAILED TO STEP      8B211940
                     *                                              8B211950
                     **********************************************  8B211960
04E7 00 44000511     TIIN4 BSI L  ERROR    PRINT TIMERS FAIL   SRC 8B211970
04E9 0  0747              DC      TMM05    TO STEP                 8B211980
04EA 0  04B7              DC      TIINT+10 LOOP ERROR RETURN       8B211990
                     **********************************************  8B212000
                     *                                              8B212010
                     **********************************************  8B212020
04EB 00 4400053C     TIIN4 BSI L  LOG      PRINT RUN MANUAL    SRC 8B212040
04E0 0  D71F              DC      TMM02                           8B212050
                     **********************************************  8B212060
                     *                                              8B212070
04EE 00 4C000146          BSC  L  CTL01+12 GO TO WAIT 1           8B212080
                     *                                              8B212090
                     **********************************************  8B212100
04F0 00 44000511     TIIN3 BSI L  ERROR    PRINT TIMERS FAIL   SRC 8B212110
04F2 0  0757              DC      TMM06    TD INTERRUPT            8B212120
04F3 0  04B7              DC      TIINT+10 LOOP ERRDR RETURN       8B212130
                     **********************************************  8B212140
04F4 0  70F6              MDX     TIIN4                           8B212150
                     *                                              8B212160
                     **********************************************  8B212170
04F5 00 4400053C     TIIN6 BSI L  LOG      PRINT TIMER INTERRPT SRC 8B212180
04F7 0  0767              DC      TMM07    LEVEL                   8B212200
                     **********************************************  8B212210
                     *                                              8B212210
04F8 00 4C8004A0          BSC  I  TIINT    RETURN TO USER      SX  8B212220
                     *                                              8B212230
                     *             TIINT SUBROUTINE CONSTANTS      8B212240
```

INTERVAL TIMER FUNCTION TEST

```
04FA 0  0654    TII00 DC    INTRP    TRAP RTNS START ADRS    88212250
04F8 0  0004    TII01 DC    /0004                            88212260
04FC 0  2000    TII02 DC    /2000                            88212280
04F0 0  E000    TII03 DC    /E000                            88212290
04FE 0  FFFF    TII04 DC    /FFFF                            88212300
                                                             88212310
0500    0000          BSS  E  0                              88212320
                *                                            88212330
0500 0  0000    NIOCC DC    /0000    TURN TIMER ON IOCC      88212340
0501 0  0420          DC    /0420                            88212350
                *                                            88212360
0502 0  0000    FIOCC DC    /0000    TURN TIMER OFF IOCC     88212370
0503 0  0420          DC    /0420                            88212380
                *                                            88212390
                *                     70 MILLISEC DELAY ROUTINE  88212400
                *                                            88212410
0504 0  0000    DEL20 DC    0                                88212420
0505 00 740001B4      MDX  L SPEED,0  SKIP IF 2 USEC CORE    88212430
0507 0  7003          MDX    *+3                             88212440
0508 00 670036B0      LDX  L3 /36B0   2 USEC INDEX           88212450
050A 0  7002          MDX    *+2                             88212460
050B 00 670032C8      LDX  L3 /32C8   4 USEC INDEX           88212470
050D 0  73FF          MDX    3  -1                           88212480
050E 0  70FE          MDX    *-2                             88212490
050F 00 4C800504      BSC  I DEL20                           88212500
                *                                            88212510
                *                                            88212520
                ****************************************     88212530
                *                     ERROR   ROUTINE        88212540
                ****************************************     88212550
                *                                            88212560
0511 0  0000    ERROR DC    0                            SE  88212570
0512 00 C4800511      LD   I ERROR    SET MESSAGE ADDRESS    88212580
0514 0  000F          STO    ERRO1+1  IN LOG CALL            88212590
0515 00 74010511      MDX  L ERROR,1                         88212600
0517 00 C4800511      LD   I ERROR    LOAD LOOP ON ERROR     88212610
0519 0  D020          STO    LPERR+1  ADDRESS                88212620
                *                                            88212630
051A 00 7401053B      MDX  L ERRID,1  SET ERR CALL INDCTOR   88212640
                *                                            88212650
051C 00 0C0001AC      XIO  L BSW      READ BIT SWITCHES      88212660
051E 00 C40001B0      LD   L BSWA     CHECK IF BYPASS        88212670
0520 0  1802          SRA    2        *ERROR PRINT           88212680
0521 0  4804          BSC    E                               88212690
0522 0  7002          MDX    ERRO2                           88212700
                *                                            88212710
                ****************************************     88212720
0523 0  401B    ERRO1 BSI    LOG      GO PRINT ERROR     SRC 88212730
0524 0  0000          DC     0                               88212740
                ****************************************     88212750
                *                                            88212760
0525 0  1010    ERRO2 SLA    16       CLEAR ERROR CALL       88212770
0526 0  0014          STO    ERRID    INDICATOR              88212780
                *                                            88212790
0527 00 C40001B0      LD   L BSWA     CHECK IF HALT ON ERR   88212800
0529 0  1801          SRA    1                               88212810
052A 0  4804          BSC    E                               88212820
052B 0  700B          MDX    WT9      HALT BIT ON            88212830
                *                                            88212840
052C 00 0C0001AC ERRO3 XIO  L BSW     READ BIT SWITCHES      88212850
052E 00 C40001B0      LD   L BSWA     CHECK IF LOOP ON       88212860
0530 0  1803          SRA    3        *ERROR REQUESTED       88212870
0531 0  4804          BSC    E                               88212880
0532 0  7006          MDX    LPERR    LOOP ERROR             88212890
                *                                            88212900
0533 00 74010511      MDX  L ERROR,1  ADD 1 TO RETURN        88212910
0535 00 4C800511      BSC  I ERROR    RETURN TO USER     SX  88212920
```

INTERVAL TIMER FUNCTION TEST

```
                *                     ERROR HALT REQUESTED   88212930
                *                                            88212940
                *                                            88212950
0537 0  3009    WT9   WAIT   9        ERROR HALT REQUESTED   88212960
0538 0  70F3          MDX    ERRO3                           88212970
                *                                            88212980
                *                     LOOP ERROR REQUESTED   88212990
                *                                            88213000
0539 00 4C000000 LPERR BSC  L  0      .                      88213010
                *                                            88213020
053B 0  0000    ERRID DC    0         ERROR CALL INDICATOR   88213030
                **************************************       88213040
                *                     LOG ROUTINE        *   88213050
                **************************************       88213060
                *                                            88213070
053C 0  0000    LOG   DC     0                          SE   88213080
                *                                            88213090
053D 0  681D    LOG01 STX    3 LOG06+1  SAVE IX 3            88213100
053E 00 0C00026A      XIO  L MASK0    MASK INTERRUPTS        88213110
0540 00 0C00026C      XIO  L MASK1                           88213120
                *                                            88213130
0542 00 C40001B3      LD   L OPIN0    CK WHICH OUTPUT DVC    88213140
0544 00 4C180564      BSC  L TWRTR,+-  *BRANCH IF 1053/1816  88213150
                *                                            88213160
0546 00 C480053C      LD   I LOG      GET MESSAGE ADDRESS    88213170
0548 0  0055          STO    PRWRT    SET IN IOCC            88213180
                *                                            88213190
0549 0  0850    LOG02 XIO    PRSNS    CHECK PRINTER READY    88213200
054A 0  4C040550      BSC  L WTA,E    BRANCH IF NOT READY    88213210
054C 0  1801          SRA    1                               88213220
054D 0  4C040552      BSC  L WTB,E    BRANCH IF BUSY         88213230
054F 0  7004          MDX    LOG05    READY AND NOT BUSY     88213240
                *                                            88213250
0550 0  300A    WTA   WAIT   10       NOT READY             88213260
0551 0  70F7          MDX    LOG02    CHECK AGAIN            88213270
                *                                            88213280
0552 0  3008    WTB   WAIT   11       BUSY                   88213290
0553 0  70F5          MDX    LOG02    CHECK AGAIN            88213300
                *                                            88213310
0554 0  0849    LOG05 XIO    PRWRT    OUTPUT MESSAGE         88213320
                *                                            88213330
0555 0  0846          XIO    PRSN     CHECK FOR OP COMPLT    88213340
0556 0  1002          SLA    2                               88213350
0557 0  4810          BSC    -                               88213360
0558 0  70FC          MDX    *-4                             88213370
0559 0  0840          XIO    PRSNS    RESET DSW              88213380
                *                                            88213390
                *                     PRINTING COMPLETE      88213400
                *                                            88213410
055A 00 67000000 LOG06 LDX  L3 0      RESTORE IX 3           88213420
055C 00 0C0001A8      XIO  L UMSK0    UNMASK INTERRUPTS      88213430
055E 00 0C0001AA      XIO  L UMSK1                           88213440
0560 00 7401053C      MDX  L LOG,1    BUMP RETURN            88213450
                *                                            88213460
0562 00 4C80053C      BSC  I LOG      RETURN TO USER     SX  88213470
                *                                            88213480
0564 0  1010    TWRTR SLA    16                              88213490
0565 0  0032          STO    WRDSW                           88213500
0566 0  0839          XIO    TWSNS    CHECK IF TYPEWRITER    88213510
0567 0  1005          SLA    5        READY                  88213520
0568 0  180F          SRA    15                              88213530
0569 00 4C180560      BSC  L TWRO1,+-                        88213540
                *                                            88213550
056B 0  300C    WTC   WAIT   12       NOT READY              88213560
056C 0  70F9          MDX    TWRTR+2                          88213570
                *                                            88213580
056D 0  C028    TWRO1 LD     TWRTO    CARRIAGE RETURN AND    88213590
056E 0  002A          STO    IOARA    LINE SPACE TO IO ARA   88213600
```

```
056F 0  0832        •   XIO    TWWRT    CARG RETURN/LINE SP     88213610
                                                                88213620
0570 0  082F            XIO    TWSNS    HANG TILL NOT BUSY      88213630
0571 0  180B            SRA    11                               88213640
0572 0  4804            BSC    E                                88213650
0573 0  70FC            MDX    *-4                              88213660
                    •                                           88213670
0574 0  6301            LDX    3 1      BYPASS 1443 WORD COUNT  88213680
0575 00 C480053C        LD     1 LOG   GET MESSAGE ADDRESS      88213690
0577 0  0001            STO    TWR02+1                          88213700
                    •                                           88213710
0578 00 C7000000 TWR02 LD    L3 0      GET WORD TO PRINT        88213720
057A 00 D4000504        STO   L CODWD   SET IN CONVERSION RT    88213730
057C 0  F01A            EOR     TWRT1   CHECK IF TERMINATOR     88213740
057D D0 4C18055A        BSC   L LOG06,+  BRANCH IF TERMINATOR   88213750
                    •                                           88213760
****************************************************             88213770
057F 00 440005A4        BSI   L CODCV   GO CONVERT 43 TO TW SRC 88213780
****************************************************             88213790
                                                                88213800
0581 00 C40005D4        LD    L CODWD                           88213810
0583 0  0015            STO     IOARA                           88213820
                    •                                           88213830
                    •                                           88213840
                    •            OUTPUT A CHARACTER             88213850
                    •                                           88213860
0584 0  081D     XIOWR  XIO    TWWRT    WRITE CHARACTER         88213870
                    •                                           88213880
0585 0  081A*    XIOSN  XIO    TWSNS    HANG ON BUSY            88213890
0586 0  1808            SRA    11                               88213900
0587 0  4804            BSC    E                                88213910
0588 0  70FC            MDX    XIOSN    BUSY                    88213920
                    •                                           88213930
                    •            CHECK IF 1ST 1/2 WORD          88213940
                    •                                           88213950
0589 0  C00E            LD     WRDSW    GET 1/2 WORD SWITCH     88213960
058A 0  4804            BSC    E                                88213970
058B 0  7006            MDX    TWR03    GO SET UP NEXT WORD     88213980
                    •                                           88213990
                    •            SET UP FOR 2ND 1/2 WORD        88214000
                    •                                           88214010
058C 0  C00C            LD     IOARA                            88214020
058D 0  1008            SLA    8        POSITION 2ND 1/2 WO     88214030
058E D  D00A            STO    IOARA                            88214040
058F 00 7401059B        MDX   L WRDSW,1 BUMP WORD SWITCH        88214050
0591 0  70F2            MDX    XIOWR    GO WRITE 2ND 1/2 WO     88214060
                    •                                           88214070
                    •            SET UP FOR NEXT WORD           88214080
                    •                                           88214090
0592 0  7301     TWR03  MDX    3 1      NEXT WORD INDEX         88214100
0593 00 7401059B        MDX   L WRDSW,1 BUMP WORD SWITCH        88214110
0595 0  70E2            MDX    TWR02    GO GET NEXT WORD        88214120
                    •                                           88214130
                    •            LOG    CONSTANTS               88214140
                    •                                           88214150
0596 0  8103     TWRTO  DC     /8103    LINE SP/CARRAIGE RTN    88214160
0597 0  FFFF     TWRT1  DC     /FFFF    TERMINATOR              88214170
0598 0  0000     WRDSW  DC     0        1/2 WORD SWITCH         88214180
0599 0  0000     IOARA  DC     0        OUTPUT AREA             88214190
                                                                88214200
059A    0000            BSS    E  0                             88214210
                    •                                           88214220
059A 0  0000     PRSNS  DC     /0000    PRINTER  SENSE IOCC     88214230
059B 0  3701            DC     /3701                            88214240
059C 0  0000     PRSN   DC     0        NON RESET SENSE         88214250
059D 0  3700            DC     /3700                            88214260
059E 0  0000     PRWRT  DC     /0000    PRINTER  WRITE IOCC     88214270
059F 0  35D0            DC     /3500                            88214280
```

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05A0 0  0000     TWSNS  DC     /0000    TYPEWTR  SENSE IOCC     88214290
05A1 0  0F03            DC     /0F03                            88214300
05A2 0  0599     TWWRT  DC     IOARA    TYPEWTR  WRITE IOCC     88214310
05A3 0  0902            DC     /0902                            88214320
                                                                88214330
****************************************************             88214340
          •            1443 CODE TO 1816/1053  *                88214350
          •            CODE CONVERSION ROUTINE  *               88214360
****************************************************             88214370
                                                                88214380
05A4 0  0000     CODCV  DC     0                            SE  88214390
05A5 0  6927            STX    1 CODC4+1  SAVE INDEX REGS       88214400
05A6 0  6A2B            STX    2 CODC4+3                        88214410
05A7 0  6B29            STX    3 CODC4+5                        88214420
                    •                                           88214430
05A8 0  1010            SLA    16        CLEAR LEFT HALF WORD   88214440
05A9 0  002B            STO    LHINO     *INDICATOR             88214450
05AA 0  6300            LDX    3 0                              88214460
                    •                                           88214470
05AB 0  C028     CODC1  LD     CODWD    GET WORD TO CONVERT     88214480
05AC 0  1890            SRT    16        SET IN Q               88214490
05AD 0  C027            LD     LHIND                            88214500
05AE D  4820            BSC    Z         SKIP IF LEFT HALF      88214510
05AF 0  1088            SLT    8         POSITION RIGHT HALF    88214520
                    •                                           88214530
05B0 0  1010            SLA    16                               88214540
05B1 0  1084            SLT    4                                88214550
05B2 0  0023            STO    CODOO     ZONE TO ACCUM          88214560
05B3 00 659005D6        LDX   I1 CODOD   IX 1 = ZONE            88214570
                    •                                           88214580
05B5 0  1010            SLA    16                               88214590
05B6 0  1084            SLT    4         DIGIT TO ACCUM         88214600
05B7 0  D01E            STO    CODOO                            88214610
05B8 00 66800506        LDX   I2 CODOO   IX 2 = DIGIT           88214620
                    •                                           88214630
05BA 00 C50005D9        LD    L1 ZONE   GET ZONE TABLE ADDRS    88214640
05BC 0  D001            STO     CODC2+1  SET IN CONVERSION WD   88214650
                    •                                           88214660
05BD 00 C6000000 CODC2  LD    L2 0      GET CONVERTED CODE      88214670
05BF 00 D70005D7        STO   L3 CODO1                          88214680
                    •                                           88214690
05C1 0  C013            LD     LHINO                            88214700
05C2 00 4C2005C8        BSC   L CODC3,Z  BRNCH IF RIGHT HALF    88214710
05C4 00 740105D5        MDX   L LHIND,1                         88214720
05C6 0  7301            MDX    3 1                              88214730
05C7 0  70E3            MDX    CODC1    GO CONVERT RIGHT HLF    88214740
                    •                                           88214750
05C8 0  C00E     CODC3  LD     CODO1    PACK CONVERTED CODES    88214760
05C9 0  1008            SLA    8                                88214770
05CA 0  E80D            OR      CODO2                           88214780
05CB 0  D008            STO    CODWD                            88214790
                    •                                           88214800
05CC 00 65000000 CODC4  LDX   L1 0      RESTORE INDEX REGS      88214810
05CE 00 66000000        LDX   L2 0                              88214820
05D0 D0 67000000        LDX   L3 0                              88214830
                    •                                           88214840
05D2 00 4C8005A4        BSC   I CODCV    RETURN TO USER     SX  88214850
                    •                                           88214860
                    •                                           88214870
                    •            CONSTANTS                      88214880
                    •                                           88214890
05D4 0  0000     CODWD  DC     0        WORD LOCATION           88214900
05D5 0  0000     LHINO  DC     0        LEFT HALF INDICATOR     88214910
05D6 0  0000     CODOO  DC     0        WORK AREA               88214920
05D7 0  0000     CODO1  DC     0        CONVERTED LH CHARACT    88214930
05D8 0  0000     CODO2  DC     0        CONVERTED RH CHARACT    88214940
                                                                88214950
                    •                                           88214960
```

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                        *              1443 TO 1816/1053 CODE         BB214970
                        *              CONVERSION TABLES               BB214980
                        *                                             BB214990
        C5D9 0  05D0    ZDNE  DC    ZONEN     NO ZONE                  BB215000
        05DA 0  05EA          DC    ZDNE1     0 ZONE                   BB215010
        05DB 0  05F3          DC    ZDNE2     11 ZONE                  BB215020
        05DC 0  05FD          DC    ZDNE3     12 ZONE                  BB215030
                                                                      BB215040
        05DD 0  0021    ZDNEN DC    /0021     SPACE                    BB215050
        05DE 0  00FC          DC    /00FC     1                        BB215060
        05DF 0  D008          DC    /00D8     2                        BB215070
        05E0 0  00DC          DC    /00DC     3                        BB215080
        C5E1 0  00F0          DC    /00F0     4                        BB215090
        C5E2 0  00F4          DC    /00F4     5                        BB215100
        05E3 0  00DD          DC    /00DD     6                        BB215110
        C5E4 0  0004          DC    /0004     7                        BB215120
        C5E5 0  00E4          DC    /00E4     8                        BB215130
        C5E6 0  00E0          DC    /00E0     9                        BB215140
        C5E7 0  00C4          DC    /00C4     0                        BB215150
        C5E8 0  0000    ZDNE1 DC    0                                  BB215160
        C5E9 0  0000          DC    0                                  BB215170
        05EA 0  D09A          DC    /009A     S                        BB215180
        C5EB 0  009E          DC    /009E     T                        BB215190
        C5EC 0  00B2          DC    /00B2     U                        BB215200
        05ED 0  0086          DC    /0086     V                        BB215210
        C5EE 0  0092          DC    /0092     W                        BB215220
        C5EF 0  0096          DC    /0096     X                        BB215230
        C5F0 0  00A6          DC    /00A6     Y                        BB215240
        C5F1 0  00A2          DC    /00A2     Z                        BB215250
        C5F2 0  0021          DC    /0021     SPACE                    BB215260
        05F3 0  0000    ZDNE2 DC    0                                  BB215270
        C5F4 0  007E          DC    /007E     J                        BB215280
        C5F5 0  005A          DC    /005A     K                        BB215290
        05F6 0  D05E          DC    /005E     L                        BB215300
        05F7 0  0072          DC    /0072     M                        BB215310
        05F8 D  0076          DC    /0076     N                        BB215320
        C5F9 0  0052          DC    /0052     O                        BB215330
        C5FA 0  0056          DC    /0056     P                        BB215340
        C5FB 0  D066          DC    /0066     Q                        BB215350
        C5FC 0  0062          DC    /0062     R                        BB215360
        05FD 0  0000    ZDNE3 DC    0                                  BB215370
        05FE D  003E          DC    /003E     A                        BB215380
        C5FF 0  001A          DC    /001A     B                        BB215390
        0600 0  D01E          DC    /001E     C                        BB215400
        0601 0  D032          DC    /0032     D                        BB215410
        0602 D  0036          DC    /0036     E                        BB215420
        0603 0  0012          DC    /0012     F                        BB215430
        0604 0  0016          DC    /0016     G                        BB215440
        0605 0  0026          DC    /0026     H                        BB215450
        0606 0  D022          DC    /0022     I                        BB215460
        0607 0  0086          DC    /0086     D ERROR                  BB215470
        0608 0  0000          DC    /0000     PERIOD                   58215480
                        *                                             BB215490
                        ***********************************           BB215500
                        *                                 *           BB215510
                        *          HEXADECIMAL TO 1443 CODED*          BB215520
                        *          HEXADECIMAL CONVERSION   *          BB215530
                        *          ROUTINE                  *          BB215540
                        ***********************************           BB215550
                        *                                             BB215560
        0609 0  0000    HEXCV DC    0                          SE     BB215570
        060A D  6A19          STX   2 HEXC2+1   SAVE INDEX 2 AND 3     BB215580
        060B 0  681A          STX   3 HEXC2+3                         BB215590
        060C 0  6204          LDX   2 4        CONVERSION INDEX        BB215600
                        *                                             BB215610
        060D 0  C01B          LD    HEXWD     GET WORD TO CONVERT     BB215620
        060E 0  1890          SRT   16        SET A IN Q              BB215630
        060F 0  1D10          SLA   16                                BB215640
        0610 0  1084    HEXC1 SLT   4         GET CHARACTER
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        0611 0     D001           STO   HEXC1+3                        BB215650
        0612 00    67000000       LDX   L3 0      SET CODE TABLE INDEX BB215660
                        *                                             BB215670
        0614 00    C7000630       LD    L3 CODEH  GET CODED CHARACTER  BB215680
        0616 00    06000629       STO   L2 HEX00-1 AND SAVE            BB215690
        0618 0     1010           SLA   16                            BB215700
                        *                                             BB215710
        0619 0     72FF           MDX   2 -1      CHECK IF DONE        BB215720
        061A 0     70F5           MDX   HEXC1                         BB215730
                        *                                             BB215740
        061B 0     C011           LD    HEX00+3   PACK CODED WORDS     BB215750
        061C 0     1008           SLA   8                            BB215760
        061D 0     E80E           OR    HEX00+2                       BB215770
        061E 0     D00F           STO   HEXCD                         BB215780
        061F 0     C00B           LD    HEX00+1                       BB215790
        0620 0     1008           SLA   8                            BB215800
        0621 0     E808           OR    HEX00                         BB215810
        0622 0     D00C           STO   HEXCD+1                       BB215820
                        *                                             BB215830
        0623 00    66000000  HEXC2 LDX  L2 0      RESTORE INDEX        BB215840
        0625 00    67000000       LDX   L3 0                          BB215850
                        *                                             BB215860
        0627 00    4CB00609       BSC   I HEXCV   RETURN TO USER    SX BB215870
                        *                                             BB215880
                        *              CONSTANTS                      BB215890
                        *                                             BB215900
        0629 0     0000      HEXWD DC   0         WORD TO CONVERT      BB215910
        062A 0     0000      HEX00 DC   0                            BB215920
        062B 0     0000           DC    0         * UNPACKED CODED    BB215930
        062C 0     0000           DC    0         * WORD              BB215940
        062D 0     D000           DC    0         *                   BB215950
                        *                                             BB215960
        062E       0000           BSS   E 0                          BB215970
                        *                                             BB215980
        062E 0     0000      HEXCD DC   0         * PACKED CODED WORD  BB215990
        062F D     0000           DC    0         *                   BB216000
                        *                                             BB216010
                        *              CONVERSION TABLE               BB216020
                        *                                             BB216030
        0630 0     000A      CODEH DC   /000A     0                    BB216040
        0631 0     0001           DC    /0001     1                    BB216050
        0632 0     0002           DC    /0002     2                    BB216060
        0633 0     0003           DC    /0003     3                    BB216070
        D634 0     0004           DC    /0004     4                    BB216080
        0635 0     0005           DC    /0005     5                    BB216090
        0636 0     0006           DC    /0006     6                    BB216100
        0637 0     0007           DC    /0007     7                    BB216110
        0638 0     0008           DC    /0008     8                    BB216120
        0639 0     0009           DC    /0009     9                    BB216130
        063A 0     0031           DC    /0031     A                    BB216140
        063B 0     0032           DC    /0032     B                    BB216140
        063C 0     0033           DC    /0033     C                    BB216160
        063D 0     0034           DC    /0034     D                    BB216170
        063E 0     0035           DC    /0035     E                    BB216180
        063F 0     0036           DC    /0036     F                    BB216190
                        *                                             BB216200
                        ***********************************           BB216210
                        *                                 *           BB216220
                        *          ROUTINE TWO INTERRUPT   *          BB216230
                        *          TRAP ROUTINE            *          BB216240
                        ***********************************           BB216250
                        *                                             BB216260
        0640 0     000D      TRAP2 DC   0                            BB216270
        0641 00    0C000502        XIO   L FIOCC   TURN TIMER OFF      BB216280
                        *                                             BB216290
        0643 00    DC0006C6        XIO   L ILSW    SENSE ILSW AND SAVE BB216300
        0645 00    D500064F        STO   L1 TRPD1-1                    BB216310
                        *                                             BB216320
        0647 00    0C0006C8        XIO   L DSW     SENSE DSW AND SAVE
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INTERVAL TIMER FUNCTION TEST

```
0649 0  D009              STO    TRP02                             BB216330
064A 00 0C0006C8          XIO  L DSW      CHECK IF DSW RESET       BB216340
064C 0  4820              BSC    Z        ON FIRST SENSE           BB216350
                                                                   3B216360
064D D  300D              WTD    WAIT 13  DSW DID NOT RESET        BB216370
                                          DSW IN ACCUMULATOR       BB216380
                                                                   BB216390
064E 00 4C400294          BOSC L RTN22    RETURN TO CALLER         BB216400
                                                                   BB216410
0650 0  0000       TRP01  DC     0        ILSW                     BB216420
0651 0  0000              DC     0                                 BB216430
0652 0  0000              DC     0                                 BB216440
0653 0  0000       TRP02  DC     0        DSW                      BB216450
                                                                   BB216460
                          TRAP ROUTINES TO DETERMINE               BB216470
                          TIMER INTERRUPT LEVEL                    BB216480
                                                                   BB216490
                          ** LEVEL 0 **                            BB216500
                                                                   BB216510
0654 0  000D       INTRP  DC     0                                 BB216520
0655 0  405E              BSI    CMTRP    CDMN RTN                 BB216530
0656 0  0A0A              DC     /0A0A    00 1443                  89216540
0657 0  000B              DC     /000B    INTRP ADRS               BB216550
                                                                   BB216560
                          ** LEVEL 1 **                            BB216570
                                                                   BB216580
0658 0  000D              DC     0                                 BB216590
0659 0  405A              BSI    CMTRP    CDMN RTN                 BB216600
065A 0  0A01              DC     /0A01    01 1443                  BB216610
065B 0  D0DC              DC     /000C    INTRP ADRS               BB216620
                                                                   BB216630
                          ** LEVEL 2 **                            BB216640
                                                                   BB216650
065C 0  0000              DC     0                                 BB216660
065D 0  4056              BSI    CMTRP    CDMN RTN                 BB216670
065E 0  0A02              DC     /0A02    02 1443                  BB216680
065F 0  000D              DC     /0000    INTRP AODRS              BB216690
                                                                   BB216700
                          ** LEVEL 3 **                            BB216710
                                                                   BB216720
0660 0  D000              DC     0                                 BB216730
0661 0  4052              BSI    CMTRP    CDMN RTN                 BB216740
0662 0  DA03              DC     /0A03    03 1443                  BB216750
0663 0  000E              DC     /000E    INTRP ADRS               BB216760
                                                                   BB216770
                          ** LEVEL 4 **                            BB216780
                                                                   BB216790
0664 0  0000              DC     0                                 BB216800
0665 0  404E              BSI    CMTRP    CDMN RTN                 BB216810
0666 D  0A04              DC     /0A04    04 1443                  BB216820
0667 0  000F              DC     /000F    INTRP ADRS               BB216830
                                                                   BB216840
                          ** LEVEL 5 **                            BB216850
                                                                   BB216860
0668 0  0000              DC     0                                 BB216870
0669 0  +04A              BSI    CMTRP    CDMN RTN                 BB216880
066A 0  0A05              DC     /0A05    05 1443                  BB216890
066B 0  D010              DC     /0010    INTRP ADRS               BB216900
                                                                   BB216910
                          ** LEVEL 6 **                            BP216920
                                                                   BB216930
066C 0  0000              DC     0                                 BB216940
066D 0  4046              BSI    CMTRP    CDMN RTN                 BB216950
066E 0  0A06              DC     /0A06    06 1443                  BB216960
066F 0  0011              DC     /0011    INTRP AORS               BB216970
                                                                   BB216980
                          ** LEVEL 7 **                            BB216990
                                                                   BB217000
```

INTERVAL TIMER FUNCTION TEST

```
0670 0  0000              DC     0                                 BB217010
0671 0  4042              BSI    CMTRP    COMN RTN                 BB217020
06.2 0  DA07              DC     /0A07    07 1443                  BB217030
0673 0  0012              DC     /0012    INTRP ADRS               BB217040
                                                                   BB217050
                          ** LEVEL 8 **                            BB217060
                                                                   BB217070
0674 0  0000              DC     0                                 BB217080
0675 0  403E              BSI    CMTRP    COMN RTN                 BB217090
0676 0  0A08              OC     /0A08    08 1443                  BB217100
0677 0  0013              DC     /0013    INTRP ADRS               BB217110
                                                                   BB217120
                          ** LEVEL 9 **                            BB217130
                                                                   BB217140
0678 0  0000              DC     0                                 BB217150
0679 D  403A              BSI    CMTRP    COMN RTN                 BB217160
067A 0  0A09              DC     /0A09    09 1443                  BB217170
067B 0  0014              DC     /0014    INTRP ADRS               BB217180
                                                                   BB217190
                          ** LEVEL 10 **                           BB217200
                                                                   BB217210
067C 0  0000              DC     0                                 BB217220
067D 0  4036              BSI    CMTRP    CDMN RTN                 BB217230
067E 0  010A              DC     /010A    10 1443                  BB217240
067F 0  0015              DC     /0015    INTRP ADRS               BB217250
                                                                   BB217260
                          ** LEVEL 11 **                           BB217270
                                                                   BB217280
0680 0  0000              DC     0                                 BB217290
0681 0  4032              BSI    CMTRP    COMN RTN                 BB217300
0682 0  0101              DC     /0101    11 1443                  BB217310
0683 0  0016              DC     /0016    INTRP ADRS               BB217320
                                                                   BB217330
                          ** LEVEL 12 **                           BB217340
                                                                   BB217350
0684 0  0000              DC     0                                 BB217360
0685 0  402E              BSI    CMTRP    COMN RTN                 BB217370
0686 0  C102              OC     /0102    12 1443                  BB217380
0687 0  0017              DC     /0017    INTRP AORS               BB217390
                                                                   BB217400
                          ** LEVEL 13 **                           BB217410
                                                                   BB217420
0688 0  0000              DC     0                                 BB217430
0689 0  402A              BSI    CMTRP    COMN RTN                 BB217440
068A 0  0103              DC     /0103    13 1443                  BB217450
068B 0  0018              DC     /0018    INTRP ADRS               BB217460
                                                                   BB217470
                          ** LEVEL 14 **                           BB217480
                                                                   BB217490
068C 0  D00D              DC     0                                 BB217500
068D C  4026              BSI    CMTRP    COMN RTN                 BB217510
068E 0  0104              DC     /0104    14 1443                  BB217520
068F 0  0019              DC     /0019    INTRP ADRS               BB217530
                                                                   BB217540
                          ** LEVEL 15 **                           BB217550
                                                                   BB217560
0690 0  D000              DC     0                                 BB217570
0691 0  4022              BSI    CMTRP    COMN RTN                 BB217580
0692 0  0105              DC     /0105    15 1443                  BB217590
0693 0  001A              DC     /001A    INTRP ADRS               BB217600
                                                                   BB217610
                          ** LEVEL 16 **                           BB217620
                                                                   BB217630
0694 0  0000              DC     0                                 BB217640
0695 0  401E              BSI    CMTRP    COMN RTN                 BB217650
0696 0  0106              DC     /0106    16 1443                  BB217660
0697 0  001B              DC     /001B    INTRP ADRS               BB217670
                                                                   BB217680
```

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           *                                                88217690
           *                           ** LEVEL 17 **       88217700
           *                                                88217710
0698 0 0000      OC    0                                    88217720
0699 0 401A      BSI   CMTRP   COMN RTN                     88217730
069A 3 0107      DC    /0107   17 1443                      88217740
069B 0 D01C      DC    /001C   INTRP AORS                   88217750
           *                                                88217760
           *                           ** LEVEL 18 **       88217770
           *                                                88217780
069C 0 0000      DC    0                                    88217790
069D 0 4016      BSI   CMTRP   COMN RTN                     88217800
069E 0 0108      DC    /0108   18 1443                      88217810
069F 0 001D      DC    /001D   INTRP ADRS                   88217820
           *                                                88217830
           *                           ** LEVEL 19 **       88217840
           *                                                88217850
06A0 0 0000      DC    0                                    88217860
06A1 0 4012      BSI   CMTRP   COMN RTN                     88217870
06A2 0 FCE0      OC    /FCE0   19 1443                      88217880
06A3 0 001E      DC    /001E   INTRP AORS                   88217890
           *                                                88217900
           *                           ** LEVEL 20 **       88217910
           *                                                88217920
06A4 0 0000      DC    0                                    88217930
06A5 0 400E      BSI   CMTRP   COMN RTN                     88217940
06A6 0 020A      DC    /020A   20 1443                      88217950
06A7 0 001F      DC    /001F   INTRP AORS                   88217960
           *                                                88217970
           *                           ** LEVEL 21 **       88217980
           *                                                88217990
06A8 0 0000      OC    0                                    88218000
06A9 0 400A      BSI   CMTRP   COMN RTN                     88218010
06AA 0 0201      DC    /0201   21 1443                      88218020
06AB 0 0020      DC    /0020   INTRP AORS                   88218030
           *                                                88218040
           *                           ** LEVEL 22 **       88218050
           *                                                88218060
06AC 0 0000      OC    0                                    88218070
06AD 0 4006      BSI   CMTRP   COMN RTN                     88218080
06AE 0 0202      OC    /0202   22 1443                      88218090
06AF 0 0021      DC    /0021   INTRP AORS                   88218100
           *                                                88218110
           *                           ** LEVEL 23 **       88218120
           *                                                88218130
06B0 0 0000      DC    0                                    88218140
06B1 0 4002      BS1   CMTRP   COHN RTN                     88218150
06B2 0 0203      OC    /0203   23 1443                      88218160
06B3 0 0022      DC    /0022   INTRP ADRS                   88218170
           *                                                88218180
           *            COMMON TRAP ROUTINE USED            88218190
           *            BY TIINT                            88218200
           *                                                88218210
06B4 0 0000      CMTRP OC    0                    SE        88218220
06B5 00 0C000502       XIO L FIOCC    TURN TIMERS OFF       88218230
           *                                                88218240
06B7 0 080E            XIO   ILSW     RESET ILSW            88218250
           *                                                88218260
06B8 0 080F            XIO   OSW      RESET DSW             88218270
           *                                                88218280
06B9 00 C48006B4       LD  I CMTRP    GET INTRP LEVEL NUMB  88218290
06BB 00 D4000777       STO L TMM07+1C SET IN PRINT MESSAGE  88218300
           *                                                88218310
06BD 00 74010684       MDX L CMTRP,1                        88218320
06BF 00 C48006B4       LD  I CMTRP    GET INTRP AODRESS     88218330
06C1 0 D008            STO   INLVL    SAVE                  88218340
06C2 00 740103E5       MDX L INTSW,1  SET INTERRUPT SWITCH  88218350
06C4 00 4C4004CB       BOSC L TIINS   RETURN TO MAIN FLOW SX 88218360
```

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           *                                                88218370
           *                          CONSTANTS             88218380
           *                                                88218390
06C6 0 0000      BSS E 0                                    88218400
           *                                                88218410
06C6 0 0000      ILSW  DC    /0000   SENSE ILSW  IOCC       88218420
06C7 0 0300            DC    /0300                          88218430
           *                                                88218440
06C8 0 0000      DSW   DC    /0000   SENSE/RESET DSW IOCC   88218450
06C9 0 0721            DC    /0721                          88218460
           *                                                88218470
06CA 0 0000      INLVL OC    0       TIMER INTERRUPT ADRS   88218480
           *                                                88218490
06CB 0 0000      ERINT OC    0                              88218500
06CC 0 COFE            LD    ERINT   SET I CTR IN Q REG     88218510
06CD 0 1890            SRT   16                             88218520
06CE 00 0C0006C6       XIO L ILSW                           88218530
           *                                                88218540
06D0 0 300E      WTE   WAIT  14      ILSW IN A REG          88218550
           *                                                88218560
06D1 00 4C40012D       BOSC L TISRT                         88218570
           *                                                88218580
           *                  RTN 6 TRAP ROUTINE            88218590
           *                                                88218600
06D3 0 0000      SPVTP OC    0       INTERRUPT ENTRY    IE  88218610
06D4 0 COFE            LO    SPVTP   I COUNT TO Q REG       88218620
06D5 0 1890            SRT   16                             88218630
06D6 0 08EF            XIO   ILSW    SENSE ILSW             88218640
06D7 0 F006            EOR   SPVCN   CHECK FOR SPV          88218650
06D8 00 4C58044B       8OSC L RTN55, BRANCH IF SPV          88218660
06DA 0 F003            EOR   SPVCN   RESTORE ILSW           88218670
           *                                                88218680
06DB 0 300F      WTF   WAIT  15      NOT SPV ERROR          88218690
           *                                                88218700
06DC 00 4C40012D       BOSC L TISRT  RESTART PROGRAM    IX  88218710
           *                                                88218720
06DE 0 2000      SPVCN DC    /2000   SPV ILSW               88218730
           *                                                88218740
           *          ***********************               88218750
           *          ROUTINE TO SERVICE ALL                88218760
           *          NON TIMER INTERRUPTS                  88218770
           *          ***********************               88218780
           *                                                88218790
06DF 0 0000      SVINT DC    0                          IE  88218800
06E0 0 D02D            STO   SVIO    SAVE ACCUMULATOR       88218810
06E1 00 0C0006C6       XIO L ILSW    RESET ILSW             88218820
06E3 00 74020700       MOX L SV7,2   SET PASS SWITCH        88218830
06E5 0 1010            SLA   16                             88218840
06E6 0 D023            STO   SV4     CLEAR AREA CODE CNTR    88218850
06E7 0 C020            LD    SV2                            88218860
06E8 0 D023            STO   SV6     SET IOCC IN USE SW      88218870
06E9 0 C01D      SVINO LD    SV1                            88218880
06EA 0 D020            STO   SV5     SET MODIFIER COUNTER    88218890
06EB 0 C01E      SVIN1 LD    SV4     *                      CB218900
06EC 0 100B            SLA   11      *                      88218910
06ED 0 E810            OR    SV5     *BUILO IOCC            88218920
06EE 0 E81D            OR    SV6     *                      88218930
06EF 0 001F            STO   SVIO+1  *                      88218940
06F0 0 0810            XIO   SVIO    SENSE DSW AND RESET    88218950
06F1 00 74FF070B       MDX L SV5,-1                         88218960
06F3 0 70F7            MOX   *-7     BRANCH IF NOT ALL MO    88218970
06F4 00 7401070A       MDX L SV4,1   INCREMENT AREA CODE    88218980
06F6 0 C013            LO    SV4                            88218990
06F7 0 900E            S     SVO     CHECK IF ALL AC USEO    88219000
06F8 0 4808            BSC   +       SKIP IF ALL AC USED    88219010
06F9 0 70EF            MDX   SVINO   GO SENSE WITH NXT AC   88219020
06FA 00 74FF070D       MDX L SV7,-1  SKIP IF SECOND PASS    88219030
06FC 0 7001            MDX   *+1                            88219040
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06FD 0 7005          MOX    SVEXT-1                           BB219050
06FE 0 C00A          LD     SV3                               BB219060
06FF 0 D00C          STO    SV6       SET IOCC FOR PI         BB219070
0700 0 1010          SLA    16                                BB219080
0701 0 D008          STO    SV4       SET AC FOR NEXT         BB219090
0702 0 70E6          MOX    SVINO     *PASS                   BB219100
0703 0 C00A          LD     SV10      RESTORE ACCUMULATOR     BB219110
0704 00 4CC0060F SVEXT BOSC I SVINT   EXIT              IX    BB219120
                 *                                            BB219130
                 *        ** CONSTANTS **                     BB219140
                                                              BB219150
0706 0 001F  SV0   DC   /001F   NUMBER OF AREA CODES          BB219160
0707 0 00FF  SV1   DC   /00FF   NUMBER OF MODIFIERS           BB219170
070B 0 0701  SV2   DC   /0701   SENSE/RESET DSW               BB219180
0709 0 0700  SV3   DC   /0700   SENSE/RESET PISW              BB219190
070A 0 0000  SV4   DC   0       AREA CODE INDICATOR           BB219200
070B 0 0000  SV5   DC   0       MODIFIER INDICATOR            BB219210
070C 0 0000  SV6   DC   0       IOCC IN USE                   BB219220
070D 0 0000  SV7   DC   0       PASS SWITCH                   BB219230
070E   0000        BSS  E   0                                 BB219240
070E 0 0000  SV10  DC   0       SENSE DSW IOCC                BB219250
070F 0 0000        DC   0                                     BB219260
                 *                                            BB219270
             *********************************************    BB219280
             *                                           *    BB219290
             *            PRINT MESSAGES                 *    BB219300
             *            1443 CODE0                      *   BB219310
             *                                           *    BB219320
             *********************************************    BB219330
                 *
0710 0 000D  TMM01 DC   /0000   WORD COUNT                    BB219330
0711 0 310A        DC   /310A   AO                            BB219340
0712 0 0A01        DC   /0A01   O1                            BB219350
0713 0 0C00        DC   /0000   SPACE                         BB219360
0714 0 0000        DC   /0000   SPACE                         BB219370
0715 C 1233        DC   /1233   SC                            BB219380
0716 0 2627        DC   /2627   OP                            BB219390
0717 0 3500        DC   /3500   E                             BB219400
071B 0 2913        DC   /2913   RT                            BB219410
0719 D 2500        DC   /2500   N                             BB219420
071A 0 1235        DC   /1235   SE                            BB219430
071B 0 2335        DC   /2335   LE                            BB219440
071C 0 3313        DC   /3313   CT                            BB219450
071D D 3534        DC   /3534   ED                            BB219460
071E 0 FFFF        DC   /FFFF   TERM                          BB219470
                 *                                            BB219480
071F 0 000B  TMM02 DC   /0008   WORD COUNT                    BB219490
0720 D 330A        DC   /330A   CO                            BB219500
0721 D 0A01        DC   /0A01   O1                            BB219510
0722 0 0000        DC   /0000   SPACE                         BB219520
0723 0 0000        DC   /0000   SPACE                         BB219530
0724 0 2914        DC   /2914   RU                            BB219540
0725 D 2500        DC   /2500   P                             BB219550
0726 0 1233        DC   /1233   SC                            BB219560
0727 0 2627        DC   /2627   OP                            BB219570
0728 0 3500        DC   /3500   E                             BB219580
0729 0 2913        DC   /2913   RT                            BB219590
072A 0 2500        DC   /2500   N                             BB219600
072B 0 FFFF        DC   /FFFF   TERM                          BB219610
                 *                                            BB219620
072C 0 000C  TMM03 DC   /000C   WORD COUNT                    BB219630
072D D 310A        DC   /310A   AO                            BB219640
072E 0 0A02        DC   /0A02   O2                            BB219650
072F D 0000        DC   /0000   SPACE                         BB219660
0730 0 0000        DC   /0000   SPACE                         BB219670
0731 0 2729        DC   /2729   PR                            BB219680
0732 0 2637        DC   /2637   OG                            BB219690
0733 0 2931        DC   /2931   RA                            BB219700
0734 0 240D        DC   /2400   M                             BB219710
                                                              BB219720
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0735 0 3326        DC   /3326   CO                            BB219730
0736 0 2427        DC   /2427   MP                            BB219740
073? 0 2335        DC   /2335   LE                            BB219750
073B 0 1335        DC   /1335   TE                            BB219760
0739 0 FFFF        DC   /FFFF   TERM                          BB219770
                 *                                            BB219780
073A 0 000B  TMM04 DC   /0008   WORD COUNT                    BB219780
073B 0 350A        DC   /350A   EO                            BB219790
073C 0 0A01        DC   /0A01   O1                            BB219800
073D 0 0000        DC   /0000   SPACE                         BB219810
073E 0 0000        DC   /0000   SPACE                         BB219820
073F 0 1235        DC   /1235   SE                            BB219830
0740 0 2814        DC   /2814   QU                            BB219840
0741 0 3525        DC   /3525   EN                            BB219850
0742 0 3335        DC   /3335   CE                            BB219860
0743 0 0035        DC   /0035   E                             BB219870
0744 0 2929        DC   /2929   RR                            BB219880
0745 0 2629        DC   /2629   OR                            BB219890
0746 0 FFFF        DC   /FFFF   TERM                          BB219900
                 *                                            BB219910
0747 0 000E  TMM05 DC   /000E   WORD COUNT                    BB219910
074B 0 350A        DC   /350A   EO                            BB219920
0749 0 0A02        DC   /0A02   O2                            BB219930
074A 0 0000        DC   /0000   SPACE                         BB219940
074B 0 0000        DC   /0000   SPACE                         BB219950
074C 0 1339        DC   /1339   TI                            BB219960
074D 0 2435        DC   /2435   ME                            BB219970
074E 0 2912        DC   /2912   RS                            BB219980
074F 0 0036        DC   /0036   F                             BB219990
0750 0 3139        DC   /3139   AI                            BB220000
0751 0 2300        DC   /2300   L                             BB220010
0752 0 1326        DC   /1326   TO                            BB220020
0753 0 0012        DC   /0012   S                             BB220030
0754 0 1335        DC   /1335   TE                            BB220040
0755 0 2700        DC   /2700   P                             BB220050
0756 0 FFFF        DC   /FFFF   TERM                          BB220060
                 *                                            BB220070
0757 D 000E  TMM06 DC   /000E   WORD COUNT                    BB220080
075B 0 350A        DC   /350A   EO                            BB220090
0759 0 0A03        DC   /0A03   O3                            BB220100
075A 0 0000        DC   /0000   SPACE                         BB220110
075B 0 0000        DC   /0000   SPACE                         BB220120
075C 0 1339        DC   /1339   TI                            BB220130
075D 0 2435        DC   /2435   ME                            BB220140
075E 0 2912        DC   /2912   RS                            BB220150
075F 0 0036        DC   /0036   F                             BB220160
0760 0 3139        DC   /3139   AI                            BB220170
0761 0 2300        DC   /2300   L                             BB220180
0762 0 1326        DC   /1326   TO                            BB220190
0763 0 0039        DC   /0039   I                             BB220200
0764 0 2513        DC   /2513   NT                            BB220210
0765 0 2927        DC   /2927   RP                            BB220220
0766 0 FFFF        DC   /FFFF   TERM                          BB220230
                 *                                            BB220240
0767 D 0010  TMM07 DC   /0010   WORD COUNT                    BB220250
076B 0 340A        DC   /340A   DO                            BB220260
0769 0 0A01        DC   /0A01   O1                            BB220270
076A 0 0000        DC   /0000   SPACE                         BB220280
076B 0 0000        DC   /0000   SPACE                         BB220290
076C 0 1339        DC   /1339   TI                            BB220300
076D 0 2435        DC   /2435   ME                            BB220310
076E 0 2912        DC   /2912   RS                            BB220320
076F 0 0026        DC   /0026   O                             BB220330
0770 0 2500        DC   /2500   N                             BB220340
0771 D 3925        DC   /3925   IN                            BB220350
0772 0 1329        DC   /1329   TR                            BB220360
0773 0 2700        DC   /2700   P                             BB220370
0774 0 2335        DC   /2335   LE                            BB220380
                                                              BB220390
                                                              BB220400
```

Addr	Label	Op	Operand	Comment	Seq
0775 0 1535		DC	/1535	VE	8B220410
0776 0 2300		DC	/2300	L	8B220420
0777 0 0000		DC	/0000	LEVEL NUMBER	8B220430
0778 0 FFFF		DC	/FFFF	TERM	8B220440
		•			
0779 0 0014	TMM08	DC	/0014	WORD COUNT	8B220450
077A 0 350A		DC	/350A	EO	8B220460
077B 0 0A04		DC	/0A04	04	8B220470
077C 0 0000		DC	/0000	SPACE	8B220480
077D 0 0000		DC	/0000	SPACE	8B220490
077E 0 2913		DC	/2913	RT	8B220500
077F 0 2500		DC	/2500	N	8B220510
0780 0 0200		DC	/0200	2	8B220520
0781 0 1339		DC	/1339	TI	8B220530
0782 0 2435		DC	/2435	ME	8B220540
0783 0 2900		DC	/2900	R	8B220550
0784 0 0000		DC	/0000	TIMER NUMBER	8B220560
0785 0 0036		DC	/0036	F	8B220570
0786 0 3139		DC	/3139	AI	8B220580
0787 0 2335		DC	/2335	LE	8B220590
0788 0 3400		DC	/3400	D	8B220600
0789 0 1326		DC	/1326	TO	8B220610
078A 0 0013		DC	/0013	T	8B220620
078B 0 1429		DC	/1429	UR	8B220630
078C 0 2500		DC	/2500	N	8B220640
078D 0 2625		DC	/2625	ON	8B220650
078E 0 FFFF		DC	/FFFF	TERM	8B220660
		•			
078F 0 0015	TMM09	DC	/0015	WORD COUNT	8B220680
0790 0 350A		DC	/350A	EO	8B220690
0791 0 0A05		DC	/0A05	05	8B220700
0792 0 0000		DC	/0000	SPACE	8B220710
0793 0 0000		DC	/0000	SPACE	8B220720
0794 0 2913		DC	/2913	RT	8B220730
0795 0 2500		DC	/2500	N	8B220740
0796 0 0200		DC	/0200	2	8B220750
0797 0 1339		DC	/1339	TI	8B220760
0798 0 2435		DC	/2435	ME	8B220770
0799 0 2900		DC	/2900	R	8B220780
079A 0 0000		DC	/0000	TIMER NUMBER	8B220790
079B 0 0036		DC	/0036	F	8B220800
079C 0 3139		DC	/3139	AI	8B220810
079D 0 2335		DC	/2335	LE	8B220820
079E 0 3400		DC	/3400	D	8B220830
079F 0 1326		DC	/1326	TO	8B220840
07A0 0 0013		DC	/0013	T	8B220850
07A1 0 1429		DC	/1429	UR	8B220860
07A2 0 2500		DC	/2500	N	8B220870
07A3 0 2636		DC	/2636	OF	8B220880
07A4 0 3600		DC	/3600	F	8B220890
07A5 0 FFFF		DC	/FFFF	TERM	8B220900
		•			
07A6 0 0013	TMM10	DC	/0013	WORD COUNT	8B220910
07A7 0 350A		DC	/350A	EO	8B220920
07A8 0 0A06		DC	/0A06	06	8B220930
07A9 0 0000		DC	/0000	SPACE	8B220940
07AA 0 0000		DC	/0000	SPACE	8B220950
07AB 0 2913		DC	/2913	RT	8B220960
07AC 0 2500		DC	/2500	N	8B220970
07AD 0 0300		DC	/0300	3	8B220980
07AE 0 1339		DC	/1339	TI	8B220990
07AF 0 2435		DC	/2435	ME	8B221000
07B0 0 2900		DC	/2900	R	8B221010
07B1 0 0000		DC	/0000	TIMER NUMBER	8B221020
07B2 0 0036		DC	/0036	F	8B221030
07B3 0 3139		DC	/3139	AI	8B221040
07B4 0 2335		DC	/2335	LE	8B221050
07B5 0 3400		DC	/3400	D	8B221060
					8B221070
					8B221080

DATE 28FE866 01MAY66 04NOV66
EC NO. 415120 415120A 415233

Addr	Label	Op	Operand	Comment	Seq
07B6 0 1326		DC	/1326	TO	8B221090
07B7 0 0039		DC	/0039	I	8B221100
07B8 0 2513		DC	/2513	NT	8B221110
07B9 0 2927		DC	/2927	RP	8B221120
07BA 0 FFFF		DC	/FFFF	TERM	8B221130
		•			
078C 0000		BSS	E 0		8B221140
		•			
07BC 0 000F	TMM11	DC	/000F	WORD COUNT	8B221160
07BD 0 350A		DC	/350A	EO	8B221170
078E 0 0A07		DC	/0A07	07	8B221180
07BF 0 0000		DC	/0000	SPACE	8B221190
07C0 0 0000		DC	/0000	SPACE	8B221200
07C1 0 2913		DC	/2913	RT	8B221210
07C2 0 2500		DC	/2500	N	8B221220
07C3 0 0300		DC	/0300	3	8B221230
07C4 0 1339		DC	/1339	TI	8B221240
07C5 0 2435		DC	/2435	ME	8B221250
07C6 0 2900		DC	/2900	R	8B221260
07C7 0 0000		DC	/0000	TIMER NUMBER	8B221270
07C8 0 3412		DC	/3412	DS	8B221280
07C9 0 1600		DC	/1600	W	8B221290
07CA 0 0000		DC	/0000	DSW IN	8B221300
07CB 0 0000		DC	/0000	*ERROR	8B221310
07CC 0 FFFF		DC	/FFFF	TERM	8B221320
		•			
07CE 0000		BSS	E 0		8B221340
		•			
07CE 0 0011	TMM12	DC	/0011	WORD COUNT	8B221360
07CF 0 350A		DC	/350A	EO	8B221370
07D0 0 0A08		DC	/0A08	08	8B221380
07D1 0 0000		DC	/0000	SPACE	8B221390
07D2 0 0000		DC	/0000	SPACE	8B221400
07D3 0 2913		DC	/2913	RT	8B221410
07D4 0 2500		DC	/2500	N	8B221420
07D5 0 0300		DC	/0300	3	8B221430
07D6 0 1339		DC	/1339	TI	8B221440
07D7 0 2435		DC	/2435	ME	8B221450
07D8 0 2900		DC	/2900	R	8B221460
07D9 0 0000		DC	/0000	TIMER NUMBER	8B221470
07DA 0 0039		DC	/0039	I	8B221480
07DB 0 2312		DC	/2312	LS	8B221490
07DC 0 1600		DC	/1600	W	8B221500
07DD 0 0000		DC	/0000	BLANK	8B221510
07DE 0 0000		DC	/0000	ILSW	8B221520
07DF 0 0000		DC	/0000	*ON INTRP	8B221530
07E0 0 FFFF		DC	/FFFF	TERM	8B221540
		•			
07E2 0000		BSS	C 0		8B221560
		•			
07E2 0 0017	TMM13	DC	/0017	WORD COUNT	8B221580
07E3 0 350A		DC	/350A	EO	8B221590
07E4 0 0A09		DC	/0A09	09	8B221600
07E5 0 0000		DC	/0000	SPACE	8B221610
07E6 0 0000		DC	/0000	SPACE	8B221620
07E7 0 2913		DC	/2913	RT	8B221630
07E8 0 2500		DC	/2500	N	8B221640
07E9 0 0400		DC	/0400	4	8B221650
07EA 0 1339		DC	/1339	TI	8B221660
07EB 0 2435		DC	/2435	ME	8B221670
07EC 0 2900		DC	/2900	R	8B221680
07ED 0 0000		DC	/0000	TIMER NUMBER	8B221690
07EE 0 1631		DC	/1631	WA	8B221700
07EF 0 1200		DC	/1200	S	8B221710
07F0 0 0000		DC	/0000	TIMER	8B221720
07F1 0 0000		DC	/0000	*CONTENTS	8B221730
07F2 0 0012		DC	/0012	S	8B221740
07F3 0 3826		DC	/3826	HO	8B221750
					8B221760

DATE 28FE866 01MAY66 04NOV66
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07F4 0  1423           DC    /1423    UL                    88221770
07F5 0  3400           DC    /3400    D                     88221780
07F6 0  3235           DC    /3235    BE                    88221790
07F7 0  0000           DC    /0000    BLANK                 88221800
07F8 0  0000           DC    /0000    EXPECTED              88221810
07F9 0  0000           DC    /0000    *COUNT                88221820
07FA 0  FFFF           DC    /FFFF    TERM                  88221830
                                                            88221840
07FC    0000    BSS E  0                                    88221850
                                                            88221860
07FC 0  0017    TMM14 DC   /0017    WORD COUNT              88221870
07FD 0  350A           DC   /350A    EO                     88221880
07FE D  0A31           DC   /0A31    OA                     88221890
07FF 0  0000           DC   /0000    SPACE                  88221900
0800 0  0000           DC   /0000    SPACE                  88221910
0801 0  2913           DC   /2913    RT                     88221920
0802 0  2500           DC   /2500    N                      88221930
0803 0  0500           DC   /0500    5                      88221940
0804 0  1300           DC   /1300    T                      88221950
0805 0  0000           DC   /0000    TIMER NUMBER           88221960
0806 0  1631           DC   /1631    WA                     88221970
0807 0  1200           DC   /1200    S                      88221980
0808 0  0000           DC   /0000    ACTUAL                 88221990
0809 0  000D           DC   /0000    *COUNT                 88222000
080A 0  0035           DC   /0035    E                      88222010
080B 0  1727           DC   /1727    XP                     88222020
080C 0  3313           DC   /3313    CT                     88222030
080D 0  3400           DC   /3400    D                      88222040
080E 0  0000           DC   /0000    EXPECTED               88222050
080F 0  0000           DC   /0000    *CDUNT                 88222060
0810 0  0027           DC   /0027    P                      88222070
0811 0  3112           DC   /3112    AS                     88222080
0812 0  1200           DC   /1200    S                      88222090
0813 0  0000           DC   0000     PASS NUMBER            88222100
0814 0  FFFF           DC   /FFFF    TERM                   88222110
                                                            88222120
0815 0  000E    TMM15 DC   /000E    WORD COUNT              88222130
0816 C  330A           DC   /330A    CO                     88222140
0817 0  0A02           DC   /0A02    02                     88222150
0818 0  0000           DC   /0000    SPACE                  88222160
0819 0  0000           DC   /0000    SPACE                  88222170
081A 0  3525           DC   /3525    EN                     88222180
081B 0  1335           DC   /1335    TE                     88222190
081C 0  2900           DC   /2900    R                      88222200
081D 0  1213           DC   /1213    ST                     88222210
081E 0  3129           DC   /3129    AR                     88222220
081F 0  1339           DC   /1339    TI                     88222230
0820 D  2537           DC   /1339    NG                     88222240
0821 0  0033           DC   /2537    C                      88222250
0822 0  2614           DC   /0033    OU                     88222260
0823 0  2513           DC   /2614    NT                     88222270
0824 G  FFFF           DC   /2513    TERM                   88222280
                       DC   /FFFF                           88222290
0825 0  000F    TMM16 DC   /000F    WORD COUNT              88222300
0826 0  330A           DC   /330A    CO                     88222310
0827 0  0A03           DC   /0A03    03                     88222320
0828 0  0000           DC   /0000    SPACE                  88222330
0829 0  000D           DC   /0000    SPACE                  88222340
082A 0  3525           DC   /3525    EN                     88222350
082B 0  1335           DC   /1335    TE                     88222360
082C D  2900           DC   /2900    R                      88222370
082D D  2514           DC   /2514    NU                     88222380
082E 0  2432           DC   /2432    MB                     88222390
082F 0  3529           DC   /3529    ER                     88222400
0830 0  0026           DC   /0026    O                      88222410
0831 0  3600           DC   /3600    F                      88222420
0832 0  1213           DC   /1213    ST                     88222430
0833 0  3527           DC   /3527    EP                     88222440
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0834 0  1200           DC   /1200    S                     88222450
0835 0  FFFF           DC   /FFFF    TERM                  88222460
                                                           88222470
0836 D  000E    TMM17 DC   /000E    WORD COUNT            88222480
0837 0  330A           DC   /330A    CO                    88222490
083B 0  0A04           DC   /0A04    04                    88222500
0839 0  0000           DC   /0000    SPACE                 88222510
083B 0  0000           DC   /0000    SPACE                 88222520
083C 0  3525           DC   /3525    EN                    88222530
083C 0  1335           DC   /1335    TE                    88222540
083D 0  2900           DC   /2900    R                     88222550
083E 0  0013           DC   /0013    T                     88222560
083F 0  3924           DC   /3924    IM                    88222570
0840 0  3529           DC   /3529    ER                    88222580
0841 0  0025           DC   /0025    N                     88222590
0842 0  1424           DC   /1424    UM                    88222600
0843 0  3235           DC   /3235    BE                    88222610
0844 0  2900           DC   /2900    R                     88222620
0845 D  FFFF           DC   /FFFF    TERM                  88222630
                                                           88222640
0846 0  001C    TMM18 DC   /001C    WORD COUNT            88222650
0847 0  350A           DC   /350A    EO                    88222660
0848 0  0A32           DC   /0A32    OB                    88222670
0849 0  0000           DC   0        SPACE                 88222680
084A 0  0000           DC   0        SPACE                 88222690
084B 0  2913           DC   /2913    RT                    88222700
084C 0  2500           DC   /250D    N                     88222710
084D 0  0100           DC   /0100    1                     88222720
084E 0  3426           DC   /3426    DO                    88222730
084F 0  1432           DC   /1432    UB                    88222740
0850 0  2335           DC   /2335    LE                    88222750
0851 0  0039           DC   /0039    I                     88222760
0852 0  2533           DC   /2533    NC                    88222770
0853 0  2900           DC   /2900    R                     88222780
0854 0  2636           DC   /2636    OF                    88222790
0855 0  0039           DC   /0039    I                     88222800
0856 0  0033           DC   /0033    C                     88222810
0857 0  1329           DC   /1329    TR                    88222820
0858 0  0034           DC   /0034    D                     88222830
0859 0  1429           DC   /1429    UR                    88222840
085A 0  3925           DC   /3925    IV                    88222850
085B 0  3700           DC   /3700    G                     88222860
085C 0  1324           DC   /1324    TM                    88222870
085D 0  2900           DC   /2900    R                     88222880
085E 0  0000           DC   /0000    TIMER NUMBER          88222890
085F 0  3312           DC   /3312    CS                    88222900
0860 0  0033           DC   /0033    C                     88222910
0861 0  1833           DC   /1833    YC                    88222920
0862 0  2335           DC   /2335    LE                    88222930
0863 0  FFFF           DC   /FFFF    TERM                  88222940
                                                           88222950
0864 0  0014    TMM19 DC   /0014    WORD COUNT            88222960
0865 0  330A           DC   /330A    CO                    88222970
0866 0  0A05           DC   /0A05    05                    88222980
0867 0  0000           DC   0        SPACE                 88222990
0868 0  0000           DC   0        SPACE                 88223000
0869 0  2935           DC   /2935    RE                    88223010
086A 0  2731           DC   /2731    PA                    88223020
086B 0  3929           DC   /3929    IR                    88223030
086C 0  0036           DC   /0036    F                     88223040
086D D  3139           DC   /3139    AI                    88223050
086E 0  2314           DC   /2314    LU                    88223060
086F 0  2935           DC   /2935    RE                    88223070
0870 0  0032           DC   /0032    B                     88223080
0871 0  3536           DC   /3536    EF                    88223090
0872 0  2629           DC   /2629    OR                    88223100
0873 0  3500           DC   /3500    E                     88223110
0874 0  3326           DC   /3326    CO                    88223120
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0875 0  2513     DC   /2513    NT            88223130
0876 D  3925     DC   /3925    IN            88223140
0877 0  1439     DC   /1439    UI            88223150
0878 0  2537     DC   /2537    NG            88223160
0879 0  FFFF     DC   /FFFF    TERM          88223170
087A 0  000D  TMM20 DC /0000   WORD COUNT    88223180
087B 0  350A     DC   /350A    EO            88223190
087C D  0A33     DC   /0A33    OC            88223200
087D 0  0000     DC   0        SPACE         88223210
087E 0  0000     DC   0        SPACE         88223220
087F D  3923     DC   /3923    IL            88223230
0880 0  2335     DC   /2335    LE            88223240
0881 0  3731     DC   /3731    GA            88223250
0882 D  2300     DC   /230D    L             88223260
0883 0  2913     DC   /2913    RT            88223270
0884 0  2500     DC   /2500    N             88223280
0885 0  3525     DC   /3525    EN            88223290
0886 0  1329     DC   /1329    TR            88223300
0887 D  180D     DC   /180D    Y             88223310
0888 0  FFFF     DC   /FFFF    TERM          88223320

0889 D  0012  TMM21 DC /0012   WORD COUNT    88223340
088A 0  350A     DC   /350A    ED            88223350
088B 0  DA34     DC   /0A34    OD            88223360
088C D  000D     DC   0        SPACE         88223370
088D D  0000     DC   0        SPACE         88223380
088E D  2913     DC   /2913    RT            88223390
088F D  250D     DC   /250D    N             88223400
0890 0  0300     DC   /D30D    3             88223410
0891 U  1339     DC   /1339    TI            88223420
0892 D  2435     DC   /2435    ME            88223430
0893 D  290D     DC   /290D    R             88223440
0894 D  0000     DC   D        TIMER NUMBER  88223450
0895 D  3329     DC   /3923    IL            88223460
0896 0  1216     DC   /1216    SW            88223470
0897 D  0016     DC   /0016    W             88223480
0898 0  3112     DC   /3112    AS            88223490
0899 0  D019     DC   /0019    Z             88223500
089A 0  3529     DC   /3529    ER            88223510
089B D  2600     DC   /2600    O             88223520
089C 0  FFFF     DC   /FFFF    TERM          88223530

089D D  0017  TMM22 DC /0017   WORD COUNT    88223540
089E D  350A     DC   /350A    ED            88223550
089F 0  0A35     DC   /0A35    OE            88223560
08A0 D  D000     DC   0        SPACE         88223570
08A1 D  D000     DC   0        SPACE         88223580
08A2 D  2913     DC   /2913    RT            88223590
08A3 0  250D     DC   /250D    N             88223600
08A4 0  D10D     DC   /010D    1             88223610
08A5 D  310D     DC   /310D    A             88223620
08A6 D  2935     DC   /2935    RE            88223630
08A7 D  3700     DC   /370D    G             88223640
08A8 0  3338     DC   /3338    CH            88223650
08A9 0  3125     DC   /3125    AN            88223660
08AA 0  3735     DC   /3735    GE            88223690
08AB 0  340D     DC   /3400    D             88223700
08AC D  2625     DC   /2625    ON            88223710
08AD D  0013     DC   /0013    T             88223720
08AE 0  3924     DC   /3924    IM            88223730
08AF 0  290D     DC   /2900    R             88223740
08B0 0  D000     DC   /0000    TIMER NUMBER  88223750
08B1 0  3312     DC   /3312    CS            88223760
08B2 0  D033     DC   /0033    C             88223770
08B3 D  1833     DC   /1833    YC            88223780
08B4 0  2335     DC   /2335    LE            88223790
08B5 0  FFFF     DC   /FFFF    TERM          882238D0
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0886 0  000B  TMM23 DC /000B   WORD COUNT    88223810
0887 0  310A     DC   /310A    AO            88223820
0888 0  DAD3     DC   /0AD3    OS            88223830
0889 D  0000     DC   0        SPACE         88223840
088A 0  0000     DC   0        SPACE         88223850
088B 0  2731     DC   /2731    PA            88223860
088C 0  1212     DC   /1212    SS            88223870
08BD 0  0033     DC   /0033    C             88223880
08BE 0  2624     DC   /2624    ON            88223890
08BF 0  2723     DC   /2723    PL            88223900
08C0 0  3513     DC   /3513    ET            88223910
08C1 0  350D     DC   /350D    E             88223920
08C2 0  FFFF     DC   /FFFF    TERM          88223930

08C3 0  0015  TMM24 DC /0015   WORD COUNT    88223950
08C4 0  350A     DC   /350A    EO            88223960
08C5 0  0A36     DC   /0A36    OF            88223970
08C6 D  000D     DC   0        SPACE         88223980
08C7 0  000D     DC   0        SPACE         88223990
08C8 0  2913     DC   /2913    RT            88224000
08C9 0  250D     DC   /250D    N             88224010
08CA 0  060D     DC   /0600    6             98224020
08CB 0  1339     DC   /1339    TI            88224030
08CC 0  2435     DC   /2435    ME            88224040
08CD 0  2900     DC   /2900    R             88224050
08CE 0  D000     DC   0        TIMER NUMBER  88224060
08CF 0  3631     DC   /3631    FA            88224070
08D0 0  3923     DC   /3923    IL            88224080
08D1 D  3534     DC   /3534    ED            88224090
08D2 0  0D13     DC   /0D13    T             88224100
08D3 0  260D     DC   /2600    O             88224110
08D4 0  3925     DC   /3925    IN            88224120
08D5 0  3329     DC   /3329    CR            88224130
08D6 0  3524     DC   /3524    EN            88224140
08D7 0  3525     DC   /3525    EN            88224150
08D8 D  130D     DC   /1300    T             88224160
08D9 0  FFFF     DC   /FFFF    TERM          88224170

08DA D  DD16  TMM25 DC /0016   WORD COUNT    88224190
08DB 0  350A     DC   /350A    ED            88224200
08DC D  010A     DC   /D1DA    10            88224210
08DD 0  000D     DC   D        SPACE         88224220
08DE 0  0000     DC   0        SPACE         88224230
08DF 0  2913     DC   /2913    RT            88224240
08E0 0  250D     DC   /250D    N             88224250
08E1 0  060D     DC   /060D    6             88224260
08E2 D  1227     DC   /1227    SP            88224270
08E3 0  1500     DC   /1500    V             88224280
08E4 0  3925     DC   /3925    IN            88224290
08E5 D  1329     DC   /1329    TR            88224300
08E6 0  2713     DC   /2713    PT            88224310
08E7 0  0026     DC   /0026    O             88224320
08E8 0  250D     DC   /250D    N             88224330
08E9 0  1339     DC   /1339    TI            88224340
08EA 0  2435     DC   /2435    ME            88224350
08EB D  29D0     DC   /2900    R             88224360
08EC 0  D000     DC   0        TIMER NUMBER  88224370
08ED 0  3312     DC   /3312    CS            88224380
08EE 0  0033     DC   /0033    C             88224390
08EF 0  1833     DC   /1833    YC            88224400
08FD D  2335     DC   /2335    LE            88224410
08F1 D  FFFF     DC   /FFFF    TERM          88224420

08F2 D  DD15  TMM26 DC /0015   WORD COUNT    88224440
08F3 0  350A     DC   /350A    EO            88224450
08F4 0  D101     DC   /0101    11            88224460
08F5 0  0DDD     DC   0        SPACE         88224470
                                            88224480
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08F6 0	0000	DC	0	SPACE	88224490
08F7 0	2913	DC	/2913	RT	88224500
08F8 0	2500	DC	/2500	N	88224510
08F9 0	0600	DC	/0600	&	88224520
08FA 0	2526	DC	/2526	NO	88224530
08FB 0	0039	DC	/0039	I	88224540
08FC 0	2513	DC	/2513	NT	88224550
08FD 0	2927	DC	/2927	RP	88224560
08FE 0	0026	DC	/0026	O	88224570
08FF 0	2500	DC	/2500	N	88224580
0900 0	1539	DC	/1539	VI	88224590
0901 0	2623	DC	/2623	OL	88224600
0902 0	3113	DC	/3113	AT	88224610
0903 0	3500	DC	/3500	E	88224620
0904 0	1339	DC	/1339	TI	88224630
0905 0	2435	DC	/2435	ME	88224640
0906 0	2900	DC	/2900	R	88224650
0907 0	0000	DC	0	TIMER NUMBER	88224660
0908 0	FFFF	DC	/FFFF	TERM	88224670
					88224680
090A	012D	ENO	TISRT		8822468 88224690

CROSS REFERENCE LISTING

SYMBOL	VALUE	REFERENCES
ACS	04AC	01F2,04A5
BSW	01AC	0147,017E,0460,0469,0474,0492,051C,052C
BSWA	0180	0148,0156,017F,01AC,0462,0468,0476,0494,051E,0527, 052E
CMTRP	06B4	0655,0659,065D,0661,0665,0669,066D,0671,0675,0679, 067D,0681,0685,0689,068D,0691,0695,0699,069D,06A1, 06A5,06A9,06AD,0681,0689,068D,063F
CODCV	05A4	057F,05D2
CODC1	05AB	05C7
CODC2	05BD	05BC
CODC3	05C8	05C2
CODC4	05CC	05A5,05A6,05A7
CODEH	0630	0614
CODWO	0504	057A,0581,05AB,05CB
CODO0	0506	05B2,0583,0587,05BB
CODO1	0507	05BF,05C8
CODO2	05D8	05CA
CONST	01A1	0143,0161,0169,0170
CTL01	013A	013E,04EE
CTL02	0173	016E,0180
CTL03	0179	0158
CTL04	016F	016C
CTL05	017E	0172
CTTBL	0345	02F5
DEL20	0504	022F,0238,028B,0417,04C5,040E,050F
DSW	06C8	0249,0306,033A,0387,038A,0303,04A8,0647,064A,0688
ERINT	06CB	01A3,043A,06CC
ERR10	0538	051A,0526
ERROR	0511	01EC,0208,0256,0250,028F,02A4,0205,031C,0390,0420, 0434,044E,04E7,04F0,0512,0515,0517,0533,0535
ERRSW	0213	0138,01BF,01EA,01FA,020F
ERRO1	0523	0514
ERRO2	0525	0522
ERRO3	052C	0538
FIOLC	0502	01E8,01F0,0231,028D,0304,0331,0382,0383,03D0,0419, 0490,04C6,040F,0641,0685
HEXCD	062E	02A0,02E0,030E,0318,036F,0399,061E,0622
HEXCV	0609	029E,0288,030C,0316,038D,0397,0627
HEXC1	0610	0611,061A
HEXC2	0623	060A,0608
HEXWO	0629	029C,0289,030A,0314,038B,0395,060D
HEXOO	062A	0616,061B,0610,061F,0621
ILSW	06C6	03E7,04A6,0643,06B7,06CE,0606,06E1
INCCT	0455	0400,041D,0426
INLVL	06CA	01C1,0271,0355,03F1,06C1
INTRP	0654	04FA
INTSW	03E5	0130,035C,0384,03A4,0387,03C0,0400,06C2
IOARA	0599	056E,0583,058C,058E,05A2
LH1ND	05D5	05A9,05A0,05C1,05C4
LOG	053C	0179,0183,018A,0191,019D,01FD,02C5,044C,0465,0470, 04E8,04F5,0523,0546,0560,0562,0575
LOG01	053D	
LOG02	0549	0551,0553
LOG05	0554	054F
LOG06	055A	0530,057D
LPERR	0539	0519,0532
LPPGM	0188	0182
MASK0	026A	015C,01BA,01E2,01F4,0217,025A,0261,02E0,0320,0362, 03A7,053E
MASK1	026C	015E,018C,0218,025B,0262,02E2,0322,0364,03A9,0540
NIOCC	0500	0102,0105,0108,01E4,0222,022D,0264,0267,0278,027B, 027E,0289,02E7,02EA,02ED,02FA,0327,0369,0378,03AB, 03C7,03C0,0404,0407,040A,0415,0487,0489,048F,04C4, 04CB,04C0,04D5,04DD
OPIND	0183	014F,0542

PRSN	059C	0555
PRSNS	059A	0549,0559
PRWRT	059E	0548,0554
RESRT	01A6	013F
RTN	0196	0177
RTNN0	0181	012E,0160,016F,0173,0175,0189,0202,024F,02CA,0335,
		03D7,043E
RTNRT	018E	0206,0254,02CF,0340,03DC,0449
RTN00	0105	0104,01F9
RTN0I	01DE	01EF,020E
RTN02	01F0	01E7
RTN03	0202	01FB
RTN04	0207	01F7
RTN05	01F8	01E1,0211
RTN10	0224	0269
RTNI1	0220	0246,0259,0260
RTN12	0256	0236
RTN13	025D	0240
RTN14	0264	0248
RTN15	0245	025C,0263
RTN20	0278	027A,02AD
RTN2I	0286	0292,02A7,02D8
RTN22	0294	064E
RTN23	02A8	0299,02D9
RTN24	0287	02C9
RTN25	02CA	0285
RTN26	0201	02AB
RTN27	02AC	0293
RTN30	02EA	02E9,0334
RTN31	02F4	031F,0330
RTN32	02FC	0300,032E
RTN33	032A	0303,0329
RTN40	0366	03D2
RTN41	036F	03A0,0386
RTN42	037A	037E,0382
RTN43	03AE	0381,03AD
RTN44	03D3	03B9
RTN50	0407	0406,042A
RTN51	0415	0423,0428
RTN52	0424	041F,0452
RTN53	042E	0437,0439,0451
RTN54	0438	044D
RTN55	0448	06D8
RTRN	0168	0190
RT00	0212	0204,04C7
RT100	026F	0251
RT200	020A	0286
RT201	0208	0270
RT202	020C	0296,02CC
RT300	0342	02F9,02FE,0308,0326,032A
RT301	0343	0337
RT302	0344	0301,0309
RT400	030E	0357
RT401	030F	035E
RT402	03E0	03C2
RT403	03E1	0372,037C,0389,03A3,03AE
RT404	03E2	0371
RT405	03E3	0309
RT406	03E4	037F,038A
RT500	0453	0440
SECCK	0182	01BE,0205,0252,02C0,0338,030A,0441
SNSWS	01AE	016B
SPEE0	0184	014C,0505
SPVCK	0454	03F5,0428,044B
SPVCN	060E	06D7,06DA
SFVTP	0603	03EB,06D4
SVEXT	0704	06FD
SV1NT	060F	01A4,0704

SVIN0	06E9	06F9,0702
SVIN1	06EB	06F3
SVIQ	070E	06E0,06EF,06F0,0703
SV0	0706	06F7
SV1	0707	06E9
SV2	0708	06E7
SV3	0709	06FE
SV4	070A	06E6,06EB,06F4,06F6,0701
SV5	070B	06EA,06ED,06F1
SV6	070C	06E8,06EE,06FF
SV7	070D	06E3,06FA
TIBCN	0185	01C0,0101,010A,0207,0221,0227,0276,0280,02C1,02D1,
		02E5,02F0,0368,03C5,0402,040F,042E
TIINT	04A0	015A,0486,04EA,04F3,04F8
TIIN1	04C4	04CF
TIIN2	0400	
TIIN3	04F0	04E3
TIIN4	04EB	04F4
TIIN5	04C8	06C4
TIIN6	04F5	04D2
TII00	04FA	0480
TII01	04FB	0483
TII02	04FC	048E
TII03	04F0	0367,04D4
TII04	04FE	0488
TIMA	0214	0132,0134,0136,010E,04C9
TIMAA	0458	0458
TIMAB	0465	046F
TIMAC	047E	047D
TIMAO	048B	048F
TIMAI	04A4	01B5,03EF,049A,04AA
TIMAL	047C	0498
TIMAN	0456	017C,0499
TIMER	019D	019C
TIM00	01BA	0196
TIM01	0217	0197
TIM02	0270	019A
TIM03	02E0	0199
TIM04	0355	019A
TIM05	03EB	0198
TISRT	0120	0187,0195,01A7,0601,06DC,0909
TIX01	049A	0457
TIX02	0498	0464,0480
TIX03	049C	0460,0483
TIX04	049D	0478,047C
TIX05	049E	0484,048D
TIX06	049F	0485
TIX07	04A2	0478
TIX08	04A3	047A
TMCNT	026E	0225,0235,023A,023F,0244
TMM0I	0710	0178
TMM02	071F	04ED
TMM03	072C	0185
TMM04	073A	0193
TMM05	0747	04E9
TMM06	0757	04F2
TMM07	0767	04F7,0688
TMM08	0779	0229,0258
TMM09	078F	0228,025F
TMM10	07A6	0282,0291
TMM11	07BC	0284,02A2,02A6
TMM12	07CE	028F,02C3,02C7
TMM13	07E2	02F2,0310,031A,031E
TMM14	07FC	0360,0360,0391,0358,039F,03C3
TMM15	0815	045E
TMM16	0825	0467
TMM17	0836	0472
TMM18	0846	01DC,01EE

INTERVAL TIMER FUNCTION TEST

```
TMM19    0864    01FF
TMM20    087A    019F
TMM21    0889    0203,02D7
TMM22    089D    0209,0200
TMM23    08B6    018C
TMM24    08C3    0411,0422
TMM25    08DA    0413,0450
TMM26    08F2    0430,0436
TRAP2    0640    02DB
TRA4A    03E6    03DE,03E9
TRPO1    0650    022A8,02AE,0280,0282,0287,0645
TRPO2    0653    0294,029A,0649
TWRTR    0564    0544,056C
TWRTO    0596    056D
TWRT1    0597    C57C
TWRO1    0560    0569
TWRO2    0578    0577,0595
TWRO3    0592    0588
TWSNS    05A0    0566,0570,0585
TWWRT    05A2    056F,0586
UMSKO    01A8    0166,01CD,0248,033C,038C,04C0,055C
UMSK1    01AA    0167,01CF,0240,033E,038E,04C2,055E
WRDSW    0598    0565,0569,053F,0593
WTA      0550    300A,054A
WTB      0552    3008,054D
WTC      056B    300C
WTO      0640    300D
WTE      0600    300E
WTF      0608    300F
WT1      0146    3001,01AC,02C0
WT2      0186    3002
WT3      0194    3003
WT4      03CF    3004
```

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1. PURPOSE

THE INTERRUPT FUNCTION TEST CHECKS THE OPERATING CONDITION OF THE
INTERRUPT CIRCUITS IN THE PROCESSOR/CONTROLLER. AUTOMATIC AND MANUAL
INTERRUPTS, INTERRUPT PRIORITY, MASK REGISTER, DISABLE INTERRUPT
SWITCH, AND TRACE MODE ARE TESTED.

2. PREREQUISITES

    2.1   PROGRAM PREREQUISITES

    THE 1800 BASIC DIAGNOSTIC LOADER PROGRAM IS REQUIRED TO LOAD THE
    INTERRUPT FUNCTION TEST PROGRAM.

    2.2   EQUIPMENT PREREQUISITES

    THE FOLLOWING EQUIPMENT IS REQUIRED.

    A. 1800 PROCESSOR/CONTROLLER.
    B. 1442 CARD READ/PUNCH OR 1054 PAPER TAPE READER.
    C. EITHER A 1053/1816, OR 1443 PRINTER.

3. USE PROCEDURE

    3.1   PROGRAM LOADING

    REFER TO 1800 BASIC DIAGNOSTIC LOADER DOCUMENTATION PARAGRAPH 3.1,
    FOR LOADING INSTRUCTIONS.

    3.2   PROGRAM OPERATION

    AFTER LOADING PROCESSOR STOPS AT WAIT 1 (B REG = 3001) WITH PROCESSOR
    STOPPED AT WAIT 1, PROCEED AS FOLLOWS -

    A. SET DISABLE INTERRUPT SWITCH TO OFF.
    B. SET CHECK STOP SWITCH TO OFF.
    C. SET WRITE STORAGE PROTECT BITS SWITCH TO YES.
    D. AT THE CE PANEL, INSURE THAT THE CE INTERRUPT SWITCH IS SET TO
        INTERRUPT TO MAIN STORAGE.
    E. SELECT PROGRAM OPTIONS FROM TABLE 1.
    F. IF LOOP ROUTINE IS DESIRED, REFER TO TABLE 2.
    G. DEPRESS START PUSHBUTTON. PROGRAM SHOULD START EXECUTION.

        1. OPERATOR SHOULD PERFORM THE ACTIONS REQUESTED BY THE PROGRAM.
            THE ACTIONS TO BE PERFORMED ARE INDICATED BY A PRINTOUT.
        2. IF THE OPTIONS OF LOOP ROUTINE OR LOOP PROGRAM ARE NOT
            SELECTED, THEN ROUTINE 1 THROUGH 6 WILL BE EXECUTED ONCE,
            FOLLOWED BY PRINTOUT A001 PROGRAM COMPLETE. THE PROGRAM
            STOPS AT WAIT 2 B REG = 3002. PRESSING START RETURNS PROGRAM
            TO WAIT 1.
        3. IF A ROUTINE WAS SELECTED FOR LOOPING, THEN THAT ROUTINE WILL
            LOOP UNTIL THE PROGRAM IS TERMINATED OR THE LOOP ROUTINE
            FUNCTION IS CHANGED OR CLEARED. IF THE LOOP ROUTINE FUNCTION
            IS CHANGED, THEN THE NEW ROUTINE SELECTED WILL BE LOOPED.
            IF THE LOOP ROUTINE FUNCTION IS CLEARED, THE PROGRAM WILL
            CONTINUE FROM THE PRESENT ROUTINE TO COMPLETION. FOR ROUTINE
            LOOPING WITH BYPASS MANUAL CHECKS, REFER TO NOTE 1 TABLE 2.
        4. IF LOOP PROGRAM WAS SELECTED, AND THE MANUAL CHECKS WERE NOT
            BYPASSED, THEN ROUTINES 1 THROUGH 6 WILL BE RUN IN SEQUENCE
            IN LOOP FASHION.
        5. IF LOOP PROGRAM WAS SELECTED AND THE MANUAL CHECKS ARE
            BYPASSED, THEN THE PROGRAM WILL RUN ROUTINE 1, 1ST PASS OF
            ROUTINE 2 AND ALL OF ROUTINE 3 AND 4 IN SEQUENTIAL LOOP
            FASHION. ROUTINE 5 AND 6 ARE NOT RUN UNDER THIS SETUP.

TABLE 1
PROGRAM OPTIONS - DATA ENTRY SWITCHES

NOTE

THE OPTIONS OF SELECT 1443 AS OUTPUT DEVICE, BYPASS MANUAL CHECKS, AND NUMBER OF INTERRUPT LEVELS SELECTED WILL BE HONORED ONLY IF THEY ARE ENTERED WHILE THE PROCESSOR IS STOPPED AT WAIT 1 IB REG = 3001).

```
*************************************************************
*      DATA ENTRY SWITCHES       *      OPTION DESCRIPTION       *
* 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 *                         *
*************************************************************
* . .              . . .      . . . 1.....  HALT ON ERROR          *
* . .              . . .      . . 1........  BYPASS ERROR PRINT     *
* . .              . . .      . 1..........  LOOP ON ERROR          *
* . .              . . .    1............    LOOP PROGRAM           *
* . .              . . 1..................   USE 1443 AS OUTPUT DEVICE *
* . .              . 1....................   BYPASS MANUAL CHECKS - NOTE 1. *
* . .            1......................     BYPASS ROUTINE 3 PRIORITY PRINTOUT *
* 0 0.......................................  12 INTERRUPT LEVELS    *
* 1 0.......................................  18 INTERRUPT LEVELS    *
* 0 1.......................................  24 INTERRUPT LEVELS    *
*************************************************************
*    NOTE 1 -- MANUAL CHECKS INCLUDE DISABLE SWITCH, CONSOLE INTERRUPT *
*              PUSHBUTTON, CE INTERRUPT BUTTON AND TRACE MODE OPERATION. *
*              SWITCH 8 BYPASSES THESE CHECKS BY PREVENTING PASS 2 OF *
*              ROUTINE 2 AND ALL OF ROUTINES 5 AND 6 FROM OPERATING. *
*              SWITCH 8 IN CONJUCTION WITH OPTION SWITCHES 7 AND 11 WILL *
*              RUN THE PROGRAM IN A MODE ADAPTABLE TO SCOPING. *
*************************************************************
```

TABLE 2

```
*************************************************************
* SENSE / PROGRAM *          OPTION DESCRIPTION          *
********************                                      *
* 0 1 2 3 4 5 6 7 *                                      *
*************************************************************
*      . . .                                             *
*      X X X.................... ROUTINE NUMBER TO LOOP. NUMBER MUST *
*                               BE IN HEX AND MAY BE CHANGED AT ANY *
*                               TIME.                    *
*                                                        *
*    NOTE --   IF ROUTINE ENTRY IS 5 OR 6 AND THE PROGRAM OPTION TO *
*              BYPASS MANUAL CHECKS HAS BEEN SELECTED, THEN THE PROGRAM *
*              WILL LOOP SELECTING THAT ROUTINE BUT NOT ALLOWING IT TO *
*              EXECUTE. IF ROUTINE ENTRY IS 2 AND BYPASS MANUAL CHECKS IS *
*              SELECTED, THEN ROUTINE 2 WILL LOOP WITHOUT CHECKING *
*              THE DISABLE INTERRUPT SWITCH.             *
*************************************************************
```

3.3   PROGRAM TERMINATION

A NORMAL PROGRAM RUN TERMINATES BY PROGRAM STOPPING AT WAIT 2 FOLLOWING 'PROGRAM COMPLETE' PRINTOUT. DEPRESSION OF THE START PUSHBUTTON WILL CAUSE PROGRAM TO BRANCH TO WAIT 1 TO PERMIT PROGRAM TO BE REPEATED, IF DESIRED.

THE PROGRAM MAY ALSO BE TERMINATED AT ANY TIME BY DEPRESSING THE IMMED STOP PUSHBUTTON. DEPRESSING RESET AND START PUSHBUTTONS WILL BRANCH PROGRAM TO WAIT 1 TO PERMIT PROGRAM TO BE REPEATED.

3.4   RESTART PROCEDURE

PRESS THE STOP, RESET AND START BUTTONS. THE PROGRAM SHOULD GO TO WAIT 1. IF THIS DOES NOT OCCUR, THE PROGRAM MUST BE RELOADED.

3.5   PROGRAM HALTS (IN LISTING)

PROGRAM WAITS ARE USED IN THIS PROGRAM, AND ARE IDENTIFIED BY REFERENCING THE B REG AND I REG.

A PROGRAM WAIT IS OF THE FORM,

30XX, I B REG).

A DESCRIPTION OF THE INDIVIDUAL PROGRAM WAITS CAN BE FOUND AT THE BEGINNING OF THE PROGRAM LISTING. A TYPICAL WAIT DESCRIPTION FOLLOWS. IT IS INCLUDED TO SHOW THE FORMAT OF THE LISTING, AND IT IS NOT NECESSARILY A DESCRIPTION OF AN ACTUAL WAIT.

```
*************************************************************
3001 D  01E0              OC       WAIT1+1
                            *             WAIT 1
                            *
                            *      ONE OF THE METERED I/O UNITS
                            *      FAILED TO SEND A RESPONSE
                            *      INTERRUPT TO THE PROGRAM. INDEX
                            *      REGISTER 1 WILL HAVE THE ADDRESS
                            *      OF THE IOCC. THE AREA CODE WILL
                            *      INDICATE THE I/O UNIT NOT READY.
                            *      IF A 2401/02 DRIVE IS NOT READY,
                            *      PROGRAM WILL NOT STOP AT WAIT 1.
                            *
*************************************************************
```

B REG, (FIRST 4 DIGIT GROUP) CORRESPONDS TO B REG READING.

I REG, (SECOND 4 DIGIT GROUP) CORRESPONDS TO I REG READING.

4.   PRINTOUTS

THE VARIOUS PRINTOUTS THAT MAY OCCUR DURING EXECUTION OF THIS PROGRAM FOLLOW.

4.1   STATUS MESSAGES

A001 PROGRAM COMPLETE

ONE PASS THROUGH THE PROGRAM HAS BEEN COMPLETED. DEPRESS START TO RETURN TO WAIT 1.

4.2   COMMAND MESSAGES

C001 TURN DISABLE SW ON PUSH START

COMMAND TO OPERATOR.

C002 TURN DISABLE SW OFF

COMMAND TO OPERATOR. PROGRAM SHOULD START EXECUTIONG WHEN SWITCH IS TURNED OFF. IF IT DOES NOT, PUSH START TO CONTINUE.

INTERRUPT FUNCTION TEST

C003 PUSH CE INTERRUPT BUTTON

    COMMAND TO OPERATOR.

C004 PUSH CONS INTRP BUTTON

    COMMAND TO OPERATOR. THE PROGRAM DELAYS FOR 1 MINUTE WAITING FOR THE
    BUTTON TO BE PUSHED. IF THE BUTTON IS NOT PUSHED, OR IF IT FAILS TO
    INTERRUPT, AN ERROR PRINTOUT WILL OCCUR.

C005 SET TRACE MODE PUSH START

    COMMAND TO OPERATOR.

C006 SET RUN MODE PUSH START

    COMMAND TO OPERATOR.

C007 SET DISABLE ON HIT CE AND CONS BTNS SET TRACE AND START

    COMMAND TO OPERATOR TO CHECK CE AND CONSOLE INTERRUPT BUTTONS FOR
    INTERRUPTS WITH DISABLE INTERRUPT SWITCH ON.

C008 REPAIR FAILURE BEFORE CONTINUING

    THIS PRINTOUT WILL FOLLOW ERROR MESSAGE E008. THE FAILURE INDICATED
    BY MESSAGE E008 CAN CAUSE LOSS OF PROGRAM CONTROL IF THE PROGRAM IS
    CONTINUED AND SHOULD THEREFORE BE REPAIRED BEFORE THE REMAINDER OF
    THE PROGRAM IS RUN.

    4.3   DATA MESSAGES

D001 RTN OX PRIORITY CHECK

    PRIORITY CHECK HEADING PRINTOUT. ROUTINE NUMBER CAN BE 3 OR 4.

REQ SEQUENCE XX XX XX XX XX
SRVC SEQUENCE XX XX XX XX XX

    THESE TWO PRINTOUTS WILL OCCUR FOLLOWING THE HEADING PRINTOUT.
    REQUEST SEQUENCE INDICATES THE ORDER (READING FROM LEFT TO RIGHT) IN
    WHICH THE INTERRUPTS WERE RECEIVED BY THE TRAP ROUTINES. SERVICED
    SEQUENCE INDICATES (READING FROM LEFT TO RIGHT) THE ORDER IN WHICH
    THE INTERRUPTS WERE SERVICED BY THE TRAP ROUTINES.

    THE FIRST INTERRUPT IS ISSUED BY ROUTINE 3, OR WITH EITHER THE TRACE
    MODE OR CE INTERRUPT BUTTON BY ROUTINE 5. THE FIRST TRAP ROUTINE
    ENTERED, WILL ISSUE AN INTERRUPT TO THE NEXT HIGHER LEVEL ETC, UNTIL
    LEVEL 00 IS REACHED. LEVEL 00 WILL CAUSE AN OP CODE VIOLATE TO
    INTERRUPT TO LEVEL ERROR. LEVEL ERROR WILL BE SERVICED IMMEDIATELY
    AND CAUSE THE SERVICING OF ALL NESTED INTERRUPTS IN THE OPPOSITE
    ORDER THAN THEY WERE RECEIVED.

    IF THE FIRST INTERRUPT REQUEST FAILS, BOTH THE REQUEST AND SERVICED
    SEQUENCE PRINTOUTS WILL BE BLANK. IF A REQUEST FAILS TO INTERRUPT
    FROM A TRAP ROUTINE, THEN, THE LEVEL FROM WHICH THE REQUEST WAS
    ISSUED WILL BE THE FIRST ONE SERVICED.

INTERRUPT FUNCTION TEST

    TYPICAL CORRECT PRINTOUTS FOLLOW.

    FOR ROUTINE 3 AND SYSTEM WITH 12 INTERRUPT LEVELS,

REQ SEQUENCE 11 10 09 08 . . . . . . .02 01 00 ER
SRVC SEQUENCE ER 00 01 02 . . . . . . .08 09 10 11

    FOR ROUTINE 3 AND SYSTEM WITH 18 INTERRUPT LEVELS,

REQ SEQUENCE 17 16 15 14 . . . . . . .02 01 00 ER
SRVC SEQUENCE ER 00 01 02 . . . . . . .14 15 16 17

    FOR ROUTINE 3 AND SYSTEM WITH 24 INTERRUPT LEVELS,

REQ SEQUENCE 23 22 21 20 . . . . . . .02 01 00 ER
SRVC SEQUENCE ER 00 01 02 . . . . . . .20 21 22 23

    FOR ROUTINE 5 AND SYSTEM WITH 12 INTERRUPT LEVELS,

REQ SEQUENCE CE IOR TR) 11 10 09 . . . . .02 01 00 ER
SRVC SEQUENCE ER   00 01 02 . . . . .09 10 11 CE IOR TR)

    FOR ROUTINE 5 AND SYSTEM WITH 18 INTERRUPT LEVELS,

REQ SEQUENCE CE IOR TR) 17 16 15 . . . . .02 01 00 ER
SRVC SEQUENCE ER   00 01 02 . . . . .15 16 17 CE IOR TR)

    FOR ROUTINE 5 AND SYSTEM WITH 24 INTERRUPT LEVELS,

REQ SEQUENCE CE IOR TR) 23 22 21 . . . . .02 01 00 ER
SRVC SEQUENCE ER   00 01 02 . . . . .21 22 23 CE IOR TR)

D002 CONSOLE BUTTON ON LEVEL XX ILSW BIT X

    THIS PRINTOUT IS GIVEN BY ROUTINE 4 TO INDICATE THE LEVEL TO WHICH
    THE CONSOLE INTERRUPT PUSHBUTTON INTERRUPTS. THE ILSW BIT IS IN
    DECIMAL. IF NO ILSW BIT WAS ON, IT WILL BE INDICATED BY AN ** N **.

    4.4   ERROR MESSAGES

E001 RTN OX LEVEL XX FAILED TO INTRP

    ROUTINE NUMBER (RTN) CAN BE 2, 4, OR 5.

    THIS ERROR PRINTOUT INDICATES THAT,

        A. THE LEVEL SPECIFIED FAILED TO RESPOND TO A PROGRAMMED
            INTERRUPT.
        B. IF RTN 03, LEVEL ER, OP CODE VIOLATE FAILED TO INTERRUPT.
        C. IF RTN 05, LEVEL ER, VIOLATING A STORAGE PROTECTED LOCATION
            FAILED TO CAUSE AN INTERRUPT.
        D. IF RTN 04, THE LEVEL SPECIFIED FAILED TO INTERRUPT AFTER THE
            MASK REGISTER WAS RESET OFF.

E002 RTN OX REQ XX GIVEN LEVL XX SRVCD

    ROUTINE NUMBER CAN BE 2, 4, OR 5. PRINTOUT OCCURS WHEN THE INTERRUPT
    GIVEN INTERRUPTS TO THE WRONG LEVEL.

INTERRUPT FUNCTION TEST

E003 RTN OX REQ XX INTRPO WITH DISABLE SW ON

        ROUTINE NUMBER CAN BE 2 OR 5. THE REQUEST NUMBER SPECIFIED RESULTED
        IN AN INTERRUPT WHILE THE DISABLE INTERRUPT SWITCH WAS ON.

E004 RTN OX WRONG ILSW ON ERR INTRP

        IF ROUTINE 2, THE ILSW WAS WRONG FOR AN OP CODE VIOLATE. IF ROUTINE
        5, THE ILSW WAS WRONG FOR A STORAGE PROTECT VIOLATION.

E005 SEQUENCE ERROR RTN OX

        ROUTINE NUMBER SPECIFIED SHOULD HAVE BEEN RUN, BUT WAS NOT. PUSH
        START TO GO TO WAIT 1.

E006 RTN 4 LEVEL XX INTRPO WHILE MASKED

        THE LEVEL SPECIFIED INTERRUPTED WHILE THE MASK REGISTER WAS SET ON.

E007 RTN 2 INT XX ILSW NOT ZERO

        THE ILSW FOR THE LEVEL INDICATED WAS NOT ZERO AFTER A PROGRAMMED
        INTERRUPT. FOLLOWING THIS PRINTOUT, IF THE PROGRAM IS IN A NORMAL
        PROGRAM RUN, IT WILL STOP AT WAIT 15 WITH ILSW IN A REGISTER.

E008 RTN 6 TRACE DID NOT INTRPT ON PASS XX

        TEN PASSES ARE MADE THROUGH THIS ROUTINE. IF ANY PASS IS MADE WITHOUT
        RECEIVING A TRACE INTERRUPT THIS PRINTOUT WILL OCCUR, INDICATING THE
        PASS NUMBER.

E009 RTN 6 EXPECTED INTRPT FROM INSTRN XX GOT XX

        THE ROUTINE HAS 10 INSTRUCTIONS WHICH SHOULD INTERRUPT IN SEQUENCE.
        IF THE SEQUENCE IS DESTROYED DUE TO A SKIPPED INSTRUCTION OR BECAUSE
        TRACE FAILED TO INTERRUPT, THE PRINTOUT WILL OCCUR, INDICATING THE
        INSTRUCTION THAT INTERRUPTED, AND THE INSTRUCTION THAT SHOULD HAVE
        INTERRUPTED.

        THE INSTRUCTIONS USED IN THE ROUTINE FOLLOW.

                1 LD   6 M
                2 RTE   7 A
                3 STO   8 BSC
                4 S   9 NOP
                5 EOR   10 MDX

E00A CONSOLE BUTTON FAILED

        IF THE CONSOLE BUTTON DOES NOT CAUSE AN INTERRUPT, OR IF THE CONSOLE
        BUTTON IS NOT DEPRESSED WITHIN 1 MINUTE AFTER THE OPERATOR WAS
        REQUESTED TO DO SO, THIS PRINTOUT WILL OCCUR.

E00B RTN1 INTRPT NOT INHIBITED AFTER XXX

        XXX REPRESENTS EITHER XIO OR BSI. THIS PRINTOUT INDICATES THAT AN
        INTERRUPT WAS NOT INHIBITED FOR 1 INSTRUCTION FOLLOWING THE
        EXECUTION OF AN XIO OR BSI INSTRUCTION.

INTERRUPT FUNCTION TEST

E00C ILLEGAL RTN ENTRY

        AN ENTRY OF 7 WAS ENTERED IN THE SENSE PROGRAM SWITCHES. THIS IS AN
        INVALID ENTRY. PROGRAM RETURNS TO WAIT 1, B REG = 3001.

5. COMMENTS

        THE INTERRUPT FUNCTION TEST CONSISTS OF A CONTROL ROUTINE AND SIX
        TESTING ROUTINES. INTERRUPT LEVELS 0 THROUGH 23 ARE CHECKED USING THE
        PROGRAMMED INTERRUPT FEATURE. LEVEL INTERNAL IS CHECKED BY ISSUING OP
        CODE VIOLATES AND STORAGE PROTECT VIOLATES. LEVELS TR AND CE ARE
        CHECKED OUT THROUGH THEIR ASSOCIATED HARDWARE. THE CONSOLE INTR
        PUSHBUTTON IS ALSO CHECKED.

        THE CONTROL ROUTINE SEQUENCES THE TEST ROUTINES AND ACCOMPLISHES THE
        PROGRAM OPTIONS SPECIFIED BY THE OPERATOR.

        ROUTINE 1 CHECKS TO INSURE THAT THE INTERRUPT IS DELAYED FOR 1
        INSTRUCTION FOLLOWING THE EXECUTION OF AN XIO AND BSI. THE XIO CHECK
        IS MADE FIRST. THE BSI CHECK IS THEN MADE BY EXECUTING THE BSI
        IMMEDIATELY AFTER AN XIO. IF AN ERROR IS DETECTED, THE CE WILL
        RECEIVE A FIX COMMAND AND THE PROGRAM WILL GO TO WAIT 1.

        ROUTINE 2 CHECKS THE BASIC OPERATION OF INTERRUPT LEVELS 0 THROUGH 23
        AND INTERRUPT LEVEL INTERNAL. PASS 1 CHECKS FOR PROPER INTERRUPTING
        AND PASS 2 CHECKS FOR NO INTERRUPTS WITH THE DISABLE INTERRUPT SWITCH
        SET TO ON. LEVEL INTERNAL IS CHECKED WITH AN OP CODE VIOLATE, AND IS
        ALSO CHECKED FOR PROPER ILSW BIT ON. LEVELS 0 THROUGH 23 ARE CHECKED
        FOR NO ILSW BIT BEING ON AFTER PROGRAM INTERRUPT. EACH PASS IS RUN
        500 TIMES.

        ROUTINE 3 CHECKS LEVELS 0 THROUGH 23 AND LEVEL INTERNAL FOR PROPER
        PRIORITY SEQUENCING. THE METHOD USED TO CHECK PRIORITY SEQUENCING IS
        EXPLAINED IN PARAGRAPH 4. PRINTOUTS, UNDER THE 'RTN OX PRIOPITY
        CHECK' PRINTOUT.

        ROUTINE 4 CHECKS THE MASK REGISTER. THE FIRST PASS CHECKS THAT THE
        MASK REG. CAN BE SET ON, AND THE SECOND PASS CHECKS THAT IT CAN BE
        RESET OFF. THE CHECK IS MADE 500 TIMES.

        ROUTINE 5 CHECKS THE HARDWARE INTERRUPT FEATURES, THAT IS THE CONSOLE
        INTR AND CE INTERRUPT PUSHBUTTONS, AND THE TRACE MODE CIRCUITRY.
        PROPER INTERRUPTING, PRIORITY, AND INTERRUPT DISABLE ARE CHECKED.
        LEVEL INTERNAL ILSW IS CHECKED FOR PROPER BIT ON AFTER A STORAGE
        PROTECT VIOLATION.

        ROUTINE 6 IS A CHECK OF TRACE MODE WHILE RUNNING A 10 INSTRUCTION
        ROUTINE. TEN PASSES ARE MADE THROUGH THIS ROUTINE. THE 10
        INSTRUCTIONS USED ARE LISTED IN PARAGRAPH 4. PRINTOUTS, UNDER
        'RTN05 EXPECTED INTRPT FROM INSTRN XX GOT XX' PRINTOUT.

INTERRUPT FUNCTION TEST

```
                        ABS                                        BB300010
028C                    ORG     /3001                              BB300020
              *                                                    BB300030
              *               ** PROGRAM WAITS **                  BB300040
              *                                                    BB300050
3001 0  0130            DC      WT1+1    WAIT 1                     BB300060
              *                                                    BB300070
              *               WAIT OCCURS AFTER PROGRAM            BB300080
              *               HAS LOADEO. PERFORM SETUP,           BB300090
              *               ENTER OESIREO OPTIONS IN             BB300100
              *               OATA ENTRY SWITCHES ANO              BB300110
              *               OEPRESS START.                       BB300120
              *                                                    BB300130
3002 0  0175            DC      WT2+1    WAIT 2                     BB300140
              *                                                    BB300150
              *               PROGRAM RAN TO COMPLETION.           BB300160
              *               OEPRESSING START RETURNS             BB300170
              *               PROGRAM TO WAIT 1.                   BB300180
              *                                                    BB300190
3003 0  0184     .      DC      WT3+1    WAIT 3                     BB300200
              *                                                    BB300210
              *               PROGRAM SEQUENCE ERROR.              BB300220
              *               SUPERVISOR SECTION OF                BB300230
              *               PROGRAM OECTEO AN ERROR              BB300240
              *               IN ROUTINE SEQUENCING.               BB300250
              *                                                    BB300260
3004 0  027F            DC      WT4+1    WAIT 4                     BB300270
              *                                                    BB300280
              *               ROUTINE 2 WAIT. TURN THE             BB300290
              *               OISABLE INTERRUPT SWITCH             BB300300
              *               CN ANO OEPRESS THE START             BB300310
              *               PUSHBUTTON.                          BB300320
              *                                                    BB300330
3005 0  0250            OC      WT5+1    WAIT 5                     BB300340
              *                                                    BB300350
              *               ROUTINE 2 WAIT. TURN THE             BB300360
              *               DISABLE INTERRUPT SWITCH             BB300370
              *               OFF. PROGRAM SHOULD START            BB300380
              *               EXECUTION. IF IT DCES NOT            BB300390
              *               (OUE IO INTERNAL INTERRUPT           BB300400
              *               FAILURE)PRESS START BUTTON           BB300410
              *               TO CONTINUE.                         BB300420
              *                                                    BB300430
3006 0  035C            DC      WT6+1    WAIT 6                     BB300440
              *                                                    BB300450
 ,            *               ROUTINE 5 WAIT. WRONG ILSW           BB300460
              *               WAS SENSEO ON STORAGE                BB300470
              *               PROTECT VIOLATE INTERRUPT.           BB300480
              *               THE ILSW IS IN THE A REG.            BB300490
              *               PUSH START TO CONTINUE.              BB300500
              *                                                    BB300510
3007 0  0386            DC      WT7+1    WAIT 7                     BB300520
              *                                                    BB300530
              *               ROUTINE 5 WAIT. SET MOOE             BB300540
              *               SWITCH TO TRACE ANO PRESS            BB300550
              *               START. PROGRAM WILL CHECK            BB300560
              *               TRACE INTERRUPT.                     BB300570
              *                                                    BB300580
3008 0  038E            DC      WT8+1    WAIT 8                     BB300570
              *                                                    BB300500
              *               ROUTINE 5 WAIT. SET MOOE             BB300610
              *               SWITCH TO RUN AND DEPRESS            BB300620
              *               START BUTTON.                        BB300630
              *                                                    BB300640
3009 0  03CF            DC      WT9+1    WAIT 9                     BB300650
              *                                                    BB300660
              *               ROUTINE 5 WAIT. SET MOOE             BB300670
              *               SWITCH TO TRACE ANO PRESS            BB300680
```

INTERRUPT FUNCTION TEST

```
              *               START. PROGRAM WILL MAKE             BB300690
              *               AN INTERRUPT PRIORITY                BB300700
              *               CHECK IN TRACE MODE                  BB300710
              *               OPERATION.                           BB300720
              *                                                    BB300730
300A 0  0306            OC      WTA+1    WAIT A                     BB300740
              *                                                    BB300750
              *               ROUTINE 5 WAIT. SCT MOOE             BB300760
              *               SWITCH TO RUN ANO OEPRESS            BB300770
              *               START BUTTON.                        BB300780
              *                                                    BB300790
300B 0  03E6            DC      WTB+1    WAIT 8                     BB300800
              *                                                    BB300810
              *               ROUTINE 5 WAIT. OEPRESS              BB300820
              *               C.E. INTERRUPT BUTTON.               BB300830
              *               PROGRAM WILL MAKE AN                 BB300840
              *               INTERRUPT PRIORITY CHECK             BB300850
              *               WITH THE C.E. INTERRUPT              BB300860
              *               LEVEL.                               BB300870
              *                                                    BB300880
300C 0  03F7            OC      WTC+1    WAIT C                     BB300890
              *                                                    BB300900
              *               ROUTINE 5 WAIT. SET THE              BB300910
              *               OISABLE INTERRUPT SWITCH             BB300920
              *               ON,THEN OEPRESS THE C.E.             BB300930
              *               INTERRUPT ANO CONSOLE                BB300940
              *               INTERRUPT BUTTONS. NO                BB300950
              *               INTERRUPT SHOULO OCCUR.              BB300960
              *               THEN SET TRACC MOOE ANO              BB300970
              *               DEPRESS START.                       BB300980
              *                                                    BB300990
300D 0  040A            OC      WTO+1    WAIT 0                     BB301000
              *                                                    BB301010
              *               ROUTINE 5 WAIT. SET THE              BB301020
              *               MOOE SWITCH TO RUN ANO               BB301030
              *               OEPRESS START.                       BB301040
              *                                                    BB301050
300E 0  040E            DC      WTE+1    WAIT E                     BB301060
              *                                                    BB301070
              *               ROUTINE 5 WAIT. TURN THE             BB301080
              *               DISABLE INTERRUPT SWITCH             BB301090
              *               OFF. PROGRAM SHOULD CONTI-           BB301100
              *               NUE. IF IT DOES NOTIDUE              BB301110
              *               TO OISABLE INTERRUPT IN-             BB301120
              *               OPERATIVE* ,WEN PUSH START           BB301130
              *               TO CONTINUE.                         BB301140
              *                                                    BB301150
300F 0  0450            OC      WTF+1    WAIT F                     BB301160
              *                                                    BB301170
              *               ROUTINE 6 WAIT. SET MOOE             BB301180
              *               SWITCH TO TRACE AND PRESS            BB301190
              *               START BUTTON. PROGRAM WILL           BB301200
              *               CHECK TRACE MODE OPERATION           BB301210
              *                                                    BB301220
3010 0  0475            DC      WT10+1   WAIT 10                    BB301230
              *                                                    BB301240
              *               ROUTINE 6 WAIT. SET MOOE             BB301250
              *               SWITCH TO RUN AND DEPRESS            BB301260
              *               START BUTTON.                        BB301270
              *                                                    BB301280
3011 0  051F            OC      WT11+1   WAIT 11                    BB301290
              *                                                    BB301300
              *               HALT ON ERROR OPTION                 BB301310
              *               REQUESTEO. OEPRESS START             BB301320
              *               BUTTON TO CONTINUE.                  BB301330
              *                                                    BB301340
3012 0  0538            DC      WT12+1   WAIT 12                    BB301350
              *                                                    BB301360
```

```
                    •              1443 NOT READY. MAKE 1443        88301370
                    •              READY AND DEPRESS START.         88301380
                    •                                               88301390
3013 0 053A         DC     WT13+1   WAIT 13                         88301400
                    •                                               88301410
                    •              1443 BUSY. THIS IS AN            88301420
                    •              ERROR CONDITION. REMEDY          88301430
                    •              CAUSE,THEN PUSH START TO         88301440
                    •              CONTINUE.                        88301450
                    •                                               88301460
3014 0 0553         DC     WT14+1   WAIT 14                         88301470
                    •                                               88301480
                    •              1816/1053 NUMBER 1 NOT           88301490
                    •              READY. MAKE READY AND PUSH       88301500
                    •              START TO CONTINUE.               88301510
                    •                                               88301520
3015 0 06C8         DC     WT15+1   WAIT 15                         88301530
                    •                                               88301540
                    •              THIS WAIT WILL OCCUR             88301550
                    •              DURING ROUTINE 2 IF OPTION       88301560
                    •              BIT SWITCH 8 IS NOT ON,AND       88301570
                    •              AN ILSW ERROR IS DETECTED        88301580
                    •              ON A PROG.GENERATED INTER-       88301590
                    •              RUPT. THE ILSW IS IN THE         88301600
                    •              A REG. DEPRESS START TO          88301610
                    •              CONTINUE.                        88301620
                    •                                               88301630
3016                DRG    300                                      88301640
012C 0 B300         DC     /B300    PID                             88301650
                    •              •••••••••••••••••••••••          88301660
                    •              • INTERRUPT FUNCT TEST •         88301670
                    •              •   **  INTRP  **      •         88301680
                    •              •                      •         88301690
                    •              ••••••••••.••••••••••••••••••••   88301700
                    •                                               88301710
                    •              CONTROL ROUTINE                  88301720
                    •                                               88301730
0120 00 440004BE    START BSI  L  INTST    SET SPURIOUS INT ADR     88301740
                    •                                               88301750
012F 0 C864         LDD    CNC02    SET RESTART ADDRESS             88301760
0130 00 0C000026    STD  L /0026    IN LOCATION 26                  88301770
0132 0 C863         LDD    CNC03                                    88301780
0133 00 DC000000    STD  L /0000                                   88301790
                    •                                               88301800
0135 0 1010         SLA    16       CLEAR BIT SWITCH                88301810
0136 0 005B         STD    BSW00    *READ IN AREA AND BY            88301820
0137 0 0061         STD    RUNSW    *PASS MAN CKS SWITCH            88301830
0138 00 0400042B    STD  L CN400    CLEAR TRACE INDICATO           88301840
013A 0 2C40         DC     /2C40    INSURE SP AREA IS              88301850
013B 0 0429         DC     CN401    *CLEAR                          88301860
                    •                                               88301870
013C 0 3001         WT1   WAIT  1   ENTER PROG.OPTIONS             88301880
                    •                                               88301890
013D 0 084C         XIO    BSW0     READ BIT SWITCHES              88301900
                    •                                               88301910
013E 0 10A0         CON01 SLT  32   CLEAR A AND Q                  88301920
013F 0 C052         LD     BSW00    GET OPTION ENTRY               88301930
0140 0 18CB         RTE    8                                       88301940
0141 0 1010         SLA    16                                      88301950
0142 0 1081         SLT    1                                       88301960
0143 0 0055         STO    RUNSW    SET RUN SWITCH                 88301970
0144 0 1010         SLA    16                                      88301980
0145 0 10B1         SLT    1                                       88301990
0146 0 D053         STO    OPIND    SET OUTPUT DEVICE ID           88302000
                    •                                               88302010
                    •                                               88302020
                    •              DETERMINE NUMBER OF LEVELS       88302030
                    •                                               88302040
```

```
0147 0 C04A         LD     8SW00    GET OPTION ENTRIES             88302050
0148 0 4810         BSC    -        SKIP IF BIT 0 ON               88302060
0149 0 7004         MDX    CTRL1    BRANCH ON NOT BIT 0            88302070
014A 0 6311         LDX  3 17       SET LEVEL INDICATOR            88302080
014B 0 684C         STX  3 LVSAV    *FOR 18 LEVELS                 88302090
014C 0 6302         LDX  3 2        SET INDEX FOR 18 LVL           88302100
014D 0 700A         MDX    CTRL3    CONTINUE                       88302110
014E 0 1001   CTRL1 SLA    1        CHECK FOR BIT 1                88302120
014F 0 4810         BSC    -        SKIP IF BIT 1 ON               88302130
0150 0 7004         MDX    CTRL2    BRANCH ON NOT BIT 1            88302140
0151 0 6317         LDX  3 23       SET LEVEL INDICATOR            88302150
0152 0 6B45         STX  3 LVSAV    *FOR 24 LEVELS                 88302160
0153 0 6304         LDX  3 4        SET INDEX FOR 24 LVL           88302170
0154 0 7003         MDX    CTRL3    CONTINUE                       88302180
0155 0 6308   CTRL2 LDX  3 11       SET LEVEL INDICATOR            88302190
0156 0 6B41         STX  3 LVSAV    *FOR 12 LEVELS                 88302200
0157 0 6300         LDX  3 0        SET INDEX FOR 12 LVL           88302210
0158 0 6B35   CTRL3 STX  3 LVLIX    SAVE INDEX SETTING             88302220
                    •                                               88302230
0159 0 1010   CON06 SLA    16                                      88302240
015A 0 0034         STO    RTNN0    CLEAR ROUTN. NUMBER            88302250
                    •                                               88302260
015B 0 082C   CNTRL XIO    SNSWS    READ SENSE SWITCHES            88302270
015C 0 1005         SLA    5        CHECK FOR LOOP RTN             88302280
015D 0 1800         SRA    13                                      88302290
015E 0 4808         BSC    *        SKIP IF LOOP ROUTINE           88302300
015F 0 7002         MDX    *+2                                     88302310
0160 0 002E         STO    RTNN0                                   88302320
0161 0 7006         MDX    CON05+2  GO EXECUTE ROUTINE             88302330
0162 0 C02C         LD     RTNN0                                   88302340
0163 0 902C         S      SIX      CK IF ALL RTNS RUN             88302350
0164 0 4818         BSC    +-                                      88302360
0165 0 7006         MDX    CON03    ALL ROUTINES HAVE RN           88302370
0166 00 7401018F  CON05 MDX  L RTNN0,1  ADD 1 TO RTN.NO.           88302380
0168 00 6580018F         LDX  I1 RTNN0                             88302390
016A 00 4080019A         BSC  I1 RTN-1   EXIT TO ROUTINE           88302400
                    •                                               88302410
                    •              ALL ROUTINES HAVE RUN            88302420
                    •                                               88302430
016C 0 0810   CON03 XIO    BSW0     READ BIT SWITCHES              88302440
016D 0 C024         LD     BSW00    GET BIT SWITCHES               88302450
016E 0 1804         SRA    4        CK LOOP PROGRAM                88302460
016F 0 4B04         BSC    E                                       88302470
0170 0 70E8         MDX    CON06    LOOP PROGRAM                   88302480
                    •                                               88302490
                    •••••••••••••••••••••••••••••••••••••••••••••    88302500
0171 00 44000523         BSI  L LOG    PRINT PROGRAM        SRC    88302510
0173 0 09C9         DC     1NM07    IS COMPLETE                    88302520
                    •••••••••••••••••••••••••••••••••••••••••••••    88302530
                    •                                               88302540
0174 0 3002   WT2   WAIT   2        PROGRAM COMPLETE               88302550
0175 00 4C00012D         BSC  L START   PROGRAM RESTART            88302560
                    •                                               88302570
                    •              *** ROUTINE RETURN ***          88302580
                    •                                               88302590
0177 0 C019   RTNRT LD     SEQCK    SEQUENCE CHECK                 88302600
0178 0 4818         BSC    +-                                      88302610
0179 0 70E1         MDX    CNTRL    CHECK OK                       88302620
                    •                                               88302630
017A 00 678D018F         LDX  13 RTNN0                             88302640
017C 00 C700092F         LD   L3 INLVT+1  GET HEX.VALUE OF RTN     88302650
017E 00 D4000A2C         STO  L INM12+15  SET IN MESSAGE           88302660
                    •                                               88302670
                    •••••••••••••••••••••••••••••••••••••••••••••    88302680
0180 00 44000523         BSI  L LOG    PRINT SEQUENCE       SRC    88302690
0182 0 0A1D         DC     INM12    ERROR                          88302700
                    •••••••••••••••••••••••••••••••••••••••••••••    88302710
                    •                                               88302720
```

INTERRUPT FUNCTION TEST

```
0183 0  3003          WT3  WAIT  3            SEQUENCE ERROR           88302730
0184 00 4C000120           BSC  L  START                               88302740
                      *                 CONTROL ROUTINE CONSTANTS      88302750
                      *                                                 88302760
                      *                                                 88302770
0186 00 00000000           OEC  0                                      88302780
0188 0  0000          SNSWS OC  /0000       REAO SENSE SW IOCC          88302790
0189 0  0760               OC  /0760                                   88302800
018A 0  0192          BSWO OC   BSWOO        REAO BIT SWITCH IOCC       88302810
0188 0  0240               OC  /0240                                   88302820
                      *                                                 88302830
018C 0  0193          BSW1 OC   BSWOl        REAO BIT SWITCH IOCC       88302840
018D 0  0240               OC  /0240                                   88302850
                      *                                                 88302860
018E 0  0000          LVLIX OC  0            NO.OF LEVELS INOEX         88302870
018F 0  0000          RTNNO OC  0            ROUTINE NUMBER             88302880
0190 0  0006          SIX  OC   6            CONSTANT 6                 88302890
0191 0  0000          SEQCK OC  0            SEQUENCE CHECK SAVE        88302900
                                                                       88302910
0192 0  0000          BSWOO DC  0            BIT SW. CONTROL OATA       88302920
0193 0  0000          BSWOl OC  0            NO INTERRUPT LEVELS        88302930
                      *                                                 88302940
0194 0  4C00          CNCO2 OC  /4C00        RESTART INSTRUCTIONS       88302950
0195 0  0120               OC   START                                  88302960
0196 0  7025          CNCO3 OC  /7025                                  88302970
0197 0  4400               OC  /4400                                   88302980
0198 0  0000          LVSAV DC  0            NO.INTR.LVLS SAVE          88302990
0199 0  0000          RUNSW OC  0                                      88303000
019A 0  0000          OPINO OC  0            OUTPUT OEVICE INOCTR       88303010
                      *                                                 88303020
                      *                 ROUTINE AOORESSES              88303030
                      *                                                 88303040
019B 0  01A6          RTN  OC   INTOO        ROUTINE 1                 88303050
019C 0  01FE               OC   INTOl        ROUTINE 2                 88303060
019D 0  0292               OC   INTO2        ROUTINE 3                 88303070
019E 0  02B5               OC   INTO3        ROUTINE 4                 88303080
019F 0  0328               OC   INTO4        ROUTINE 5                 88303090
01A0 0  0446               OC   INTO5        ROUTINE 6                 88303100
01A1 0  01A2               OC   INTER        INVALIO ENTRY             88303110
                      *                                                 88303120
                      ******************************************       88303130
01A2 00 44000523      INTER BSI L  LOG        PRINT INVALIO ENTRY SRC  88303140
01A4 0  089F               OC   INM25                                  88303150
                      ******************************************       88303160
                      *                                                 88303170
01A5 0  7096               MOX  WT1          RETURN TO WAIT 1          88303180
                      *                                                 88303190
                      ******************************************       88303200
                      *                 ROUTINE NUMBER ONE            88303210
                      ******************************************       88303220
                      *                                                 88303230
01A6 00 0C000320      INTOO XIO L  MASKO       MASK INTERRUPTS          88303240
01A8 00 0C000322           XIO L  MASK1                                88303250
                      *                                                 88303260
01AA 0  6318               LOX  3 27         SET INTERRUPT             88303270
01AB 00 C40001F5           LO   L  VCTOR     *TRANSFER VECTOR          88303280
01AO 00 07000007           STO  L3 7                                  88303290
01AF 0  73FF               MOX  3 -1                                  88303300
01B0 0  70FC               MOX  *-4                                   88303310
                      *                                                 88303320
01B1 0  C848               LOO  XIO          SET UP MESSAGE            88303330
01B2 00 C0000886           STO  L  INM23+22                           88303340
01B4 00 CC00028C           LOD  L  XIOCC     SET UP IOCC               88303350
01B6 00 C400028A           STO  L  ISINT                              88303360
01B8 0  630C               LOX  3 12         SET INTRP INOEX           88303370
01B9 00 650001C5           LOX  L1 PL1+1     SET UP TRAP ROUTINF       88303380
01B8 00 60000608           STX  L1 PLEXT+1   RETURN                    88303390
01BO 00 0C000324           XIO  L  UMSKO     UNMASK INTERRUPTS         88303400
```

```
018F 00 0C000326           XIO  L  UMSK1                              88303410
01C1 00 0C00028A      INOO1 XIO  L  ISINT      ISSUE INTRP  CHECK      88303420
01C3 0  1000               NOP             *POLL ON XIF               88303430
01C4 0  701C          PL1  MOX  FAIL        INTERRUPT FAILEO          88303440
01C5 0  C030               LO   ICTR        CHECK FOR PROPER 1        88303450
01C6 0  F030               EOR  XIOCK       *COUNT ON INTERRUPT       88303460
01C7 00 4C2001E9           8SC  L  POLER,Z   BRANCH ON WRONG I CT     88303470
                      *                                                 88303480
01C9 0  C832               LOO  BSI         SET UP MESSAGE            88303490
01CA 00 0C000886           STO  L  INM23+22                           88303500
01CC 00 65000106           LOX  L1 PL2+1    SET UP TRAP ROUTINE       88303510
01CE 00 60000608           STX  L1 PLEXT+1  *RETURN                   88303520
                      *                                                 88303530
01D0 00 0C00028A           XIO  L  ISINT     ISSUE INTRP   CHECK      88303540
01D2 0  4000               BSI  *           *FOLL ON BSI              88303550
01D3 0  1000               NOP                                       88303560
01D4 0  1000               NOP                                       88303570
01D5 0  7004          PL2  MOX  *+4         8RNCH IF INTRP FAILO      88303580
01D6 0  C01F               LO   ICTR        CHECK FOR PROPER I        88303590
01D7 0  F020               EOR  BSICK       *COUNT ON INTERRUPT       88303600
01D8 00 4C2001E9           BSC  L  POLER,Z   8RANCH ON WRONG I CT     88303610
                      *                                                 88303620
01DA 0  C0B4          INOO2 LO   RTNNO       PREPARE SEQUENCE CK      88303630
01DB 0  FO1D               EOR  CNOO1                                 88303640
01DC 0  00B4               STO  SEQCK                                 88303650
01DD 00 440004BE           BSI  L  INTST     SETUP XFER VECTORS  SRC  88303660
                      *                                                 88303670
01DF 00 4C000177           8SC  L  RTNRT     RETURN TO CONTROL        88303680
01E1 00 C400028A      FAIL LO   L  ISINT     MOOIFY IOCC FOR          88303690
01E3 0  1001               SLA  1           *NEXT INTERRUPT           88303700
01E4 00 D400028A           STO  L  ISINT                              88303710
01E6 0  73FF               MOX  3 -1                                  88303720
01E7 0  7009               MOX  INOO1        CONTINUE                 88303730
01E8 0  70F1               MOX  INOO2        ENO ROUTINE              88303740
                      *                                                 88303750
01E9 00 650001A6      POLER LOX  L1 INTOO    SET LOOP ERROR           88303760
01EB 00 60000521           STX  L1 LPERR+1   *RETURN                  88303770
                      *                                                 88303780
                      ******************************************       88303790
01E0 00 440004F5           BSI  L  ERROR     PRINT POLL ERROR    SRC  88303800
01EF 0  0B70               OC   INM23        MESSAGE TAG              88303810
01F0 00 44000523           BSI  L  LOG       PRINT FIX COMMANO        88303820
01F2 0  0B89               OC   INM24                                 88303830
                      ******************************************       88303840
                      *                                                 88303850
01F3 00 4C00013C           BSC  L  WT1       GO TO WAIT 1             88303860
                      *                                                 88303870
                      *                 ROUTINE 1 CONSTANTS           88303880
                      *                                                 88303890
01F5 0  0601          VCTOR OC  POLL        TRANSFER VECTOR           88303900
01F6 0  0000          ICTR OC   0           I COUNT ON INTERRUPT      88303910
01F7 0  01C4          XIOCK OC  PL1         XIO CHECK CONSTANT        88303920
01F8 0  0105          BSICK OC  PL2         8SI CHECK CONSTANT        88303930
01F9 0  0001          CNOO1 OC  1           CONSTANT 1                88303940
01FA 0  0000               BSS  E                                    88303950
01FA 0  0017          XIO  DC   /0017       X                        88303960
01FB 0  3926               OC   /3926       10                       88303970
01FC 0  0032          8SI  OC   /0032       B                        88303980
01FD 0  1239               OC   /1239       SI                       88303990
                      *                                                 88304000
                      ******************************************       88304010
                      *                 ROUTINE NUMBER TWO           88304020
                      ******************************************       88304030
                      *                                                 88304040
01FE 00 C4000931      INTO1 LO   L  INLVT+3  GET HEX 2                88304050
0200 00 04000975           STO  L  INM03+7   SET ROUTINE NUMBER       88304060
0202 00 0400098A           STO  L  INM04+7   IN ERROR MESSAGES        88304070
0204 00 040009A1           STO  L  INM05+7                           88304080
```

INTERRUPT FUNCTION TEST

```
0206 00 040009BB       STO  L  INM06+7                        BB304090
                  •                                           BB304100
0209 00 440004AA       BSI  L  LVLST      GO SET INTERPT ADRSS BB304110
                  •                                           BB304120
020A 00 C4000280       LD   L  CN101                          BB304130
020C 00 D4000281       STO  L  CN102      SET 1ST PASS SWITCH  BB304140
020E 00 C4000284       LD   L  CN105      SET PASS SWITCH      BB304150
0210 00 D4000285       STO  L  PSSW                           BB304160
                  •                                           BB304170
0212 00 C40002B2  RT100 LD  L  CN103                          BB304180
0214 00 D40002B6       STD  L  ECKSW      SE LVL ER CHECK SW.  BB304190
0216 00 65800198       LDX  I1 LVSAV                          BB304200
0218 0  7101           MDX     1 1        IX 1 = NO.LEVELS +1  BB304210
0219 00 66800198       LDX  I2 LVSAV                          BB304220
021B 0  7201           MDX     2 1        1X 2 = NO.LEVELS +1  BB304230
021C 00 67000226       LDX  L3 RT101                          BB304240
021E 00 6F000521       STX  L3 LPERR+1    SET LOOP ERR RETURN  BB304250
                  •                                           BB304260
0220 00 67B0018E       LDX  I3 LVLIX      SET UP INTERRUPT     BB304270
0222 00 CF00028C       LDD  L3 XIOCC      IOCC                 BB304280
0224 00 0C00028A       STD  L  ISINT                          BB304290
                  •                                           BB304300
0226 00 C600092E  RT101 LD  L2 INLVT      SET REQUEST NUMBER   BB304310
0228 00 04000979       STO  L  INM03+11   IN ERROR MESSAGES    BB304320
022A 00 D400098E       STO  L  INM04+11                        BB304330
022C 00 040009A5       STO  L  INM05+11                        BB304340
022E 00 04000A4F       STO  L  INM14+10                        BB304350
                  •                                           BB304360
0230 0  0859           X10     ISINT      ISSUE PROGMO INTRPT  BB304370
0231 0  1000           NOP                                    BB304380
0232 00 440006D7       BSI  L  SERVC      PRGM OPERATION PROT SRC BB304390
                  •                                           BB304400
0234 00 C4000281  RT109 LD  L  CN102      REQUEST OIO NOT INRP BB304410
0236 00 4B18           BSC     +-                             BB304420
0237 0  7003           MDX     RT104      NOT 1ST PASS  OK     BB304430
                  •                                           BB304440
        ************************************************      BB304450
0238 00 440004F5       BSI  L  ERROR      PRINT REQUEST FAILEO SRC BB304460
023A 0  096E           DC      INM03      TO INTERRUPT         BB304470
        ************************************************      BB304480
                  •                                           BB304490
                  •                                           BB304500
                  •          RETURN FRCM TRAP ROUTINES         BB304510
                  •                                           BB304510
023B 0  71FF      PT104 MDX   1 -1        CK IF ALL LVLS DONE  BB304520
023C 0  701C           MDX     RT105      NO                   BB304530
023D 00 74FF0286       MDX  L  ECKSW,-1   LEVEL ERROR CHECKED  BB304540
023F 0  7027           MDX     RT106      NO                   BB304550
0240 00 74FF0285       MDX  L  PSSW,-1    SKIP IF 500 PASSES   BB304560
0242 0  70CF           MDX     RT100                           BB304570
                  •                                           BB304580
                  •          1ST PASS COMPLETE CHECK IF        BB304590
                  •          MODE IS RUN WITHDUT STOPS         BB304600
                  •                                           BB304610
0243 00 C4000199       LD   L  RUNSW      GET RUN SWITCH       BB304620
0245 00 4C200250       BSC  L  RT110,Z    RUN WITH OUT STOPS   BB304630
                  •                                           BB304640
                  •          RUN NDRMAL PROGRAM MODE           BB304650
                  •                                           BB304660
0247 0  C039           LD      CN102      GET 1ST PASS SWITCH  BB304670
0248 0  4820           BSC     Z                              BB304680
0249 0  702F           MDX     RT107      1ST PASS             BB304690
                  •                                           BB304700
                  •          ROUTINE ONE COMPLETE              BB304710
                  •                                           BB304720
024A 00 440004A0       BSI  L  NEST1      SET NEST ADDRESSES   BB304730
                  •                                           BB304740
        ************************************************      BB304750
024C 00 44000523       BSI  L  LOG        PRINT TURN OISABLE  SRC BB304760
```

INTERRUPT FUNCTION TEST

```
024E 0  095E           DC      INM02      SWITCH OFF           BB304770
        ************************************************      BB304780
                  •                                           BB304790
024F 0  3005           WT5     WAIT  5    TURN DISABLE SW OFF  BB304800
                  •                                           BB304810
0250 00 C400018F  RT110 LD  L  RTNND      PREPARE SEQUENCE CK  BB304820
0252 0  902F           S       CN103                          BB304830
0253 00 04000191       STO  L  SEQCK                          BB304840
                  •                                           BB304850
0255 00 4400048E       BSI  L  INTST      SET SPURIOUS INT ADR BB304860
                  •                                           BB304870
0257 00 4C000177       BSC  L  RTNRT      RETURN TO CONTROL    BB304880
                  •                                           BB304890
0259 0  C030      RT105 LD      ISINT      GET IOCC AODRS WO    BB304900
025A 0  4808           BSC     +          CK BIT 0 = 1         BB304910
025B 0  7004           MDX     RT108      BIT 0 = 1            BB30492C
025C 0  1001           SLA     1                              BB304930
025D 0  D02C           STD     ISINT                          BB304940
025E 0  72FF           MDX     2 -1       SET FOR NEXT LVL. NO BB304950
025F 0  70C6           MDX     RT101      CONTINUE             BB304960
                  •                                           BB304970
0260 0  C02A      RT108 LD      ISINT+1    CLEAR BIT 15 FROM    BB304980
0261 0  901E           S       CN101      IOCC CONTROL WORD    BB304990
0262 0  0028           STD     ISINT+1                         BB305000
0263 0  C01C           LD      CN101      SET BIT 13 IN IOCC   BB305010
0264 0  1002           SLA     2          AOORESS WORD         BB305020
0265 0  0024           STO     ISINT                          BB305030
0266 0  70F7           MOX     RT105+5                         BB305040
                  •                                           BB305050
0267 0  72FF      RT106 MDX    2 -1                            BB305060
0268 0  1000           NDP                                    BB305070
0269 00 C600092E       LD   L2 INLVT      LEVEL ERROR          BB305080
026B 00 04000979       STO  L  INM03+11   SET IN ERROR         BB305090
026D 00 0400098E       STD  L  INM04+11   *MESSAGES            BB305100
026F 00 040009A5       STO  L  INM05+11                        BB305110
0271 00 D4000A4F       STO  L  INM14+10                        BB305120
0273 00 67000277       LOX  L3 RT106+16                        BB305130
0275 00 6F000521       STX  L3 LPERR+1    LOOP ERROR RETURN    BB305140
                  •                                           BB305150
0277 0  0100           DC      /0100      ILLEGAL OP CODE      BB305160
                  •                                           BB305170
                  •          ILLEGAL OP COOE OIO               BB305180
                  •          NOT INTERRUPT                     BB305190
                  •                                           BB305200
0278 0  70BB           MDX     RT109                           BB305210
                  •                                           BB305220
0279 0  1010      RT107 SLA    16                             BB305230
027A 0  0006           STO     CN102      CLEAR 1ST PASS SW.   BB305240
                  •                                           BB305250
        ************************************************      BB305260
027B 00 44000523       BSI  L  LOG        PRINT TURN DISABLE   SRC BB305270
027D 0  0949           DC      INM01      SWITCH ON            BB305280
        ************************************************      BB305290
                  •                                           BB305300
027E 0  3004           WT4     WAIT  4    SET DISABLE SW ON    BB305310
                  •                                           CD305320
027F 0  708E           MDX     RT100-4    GO MAKE 2ND PASS     BB305330
                  •                                           BB305340
                  •                                           BB305350
                  •          ROUTINE TWO CONSTANTS             BB305360
                  •                                           BB305370
0280 0  0001      CN101 DC     1                              BB305380
0281 0  0000      CN102 OC     0          1ST PASS SWITCH      BB305390
0282 0  0002      CN103 DC     2                              BB305400
0283 0  0607      CN104 DC     SERVC                          BB305410
0284 0  01F4      CN105 DC     /01F4      PASS CONSTANT        BB305420
0285 0  0000      PSSW  OC     0          PASS SWITCh          BB305430
                  •                                           BB305440
```

```
0286 0  0000          ECKSW DC    0           LEVEL ERR CHECK SW.      88305450
      *                                                                88305460
0288 00 00000000            DEC   0                                    88305470
028A 0  0000          ISINT DC    0           PROGRAMED INTERRUPT      88305480
028B 0  0000                OC    0           IOCC                     88305490
      *                                                                88305500
028C 0  0010          XIOCC OC    /0010       12 LEVELS OF INTRPT      88305510
028D 0  04A0                DC    /04A0                                88305520
028E 0  1000                OC    /1000       18 LEVELS OF INTRP       88305530
028F 0  04A1                DC    /04A1                                88305540
0290 0  0040                DC    /0040       24 LEVELS OF INTRPT      88305550
0291 0  04A1                OC    /04A1                                88305560
      *                                                                88305570
      *                                                                88305580
      ******************************************                       88305590
      *                 ROUTINE NUMBER THREE                           88305600
      ******************************************                       88305610
      *                                                                88305620
0292 00 C4000932      INT02 LD    L INIVT+4   GET HEX 3                88305630
0294 00 D4000A5F            STO   L INM15+7   SET IN LOG MESSAGE       88305640
      *                                                                88305650
0296 00 440004B8            BSI   L PRIST     GO SET TRAP AODRESS SRC  88305660
      *                                                                88305670
0298 00 6580018E            LDX   I1 LVLIX    SET IOCC FOR LOWEST      88305680
029A 00 C000028C            LDO   L1 XIOCC    INTERRUPT LEVEL          88305690
029C 0  D815                STO     CN200                              88305700
      *                                                                88305710
029D 00 67800198            LDX   I3 LVSAV    NUMBER OF INTERRUPTS     88305720
029F 0  7302                MOX     3 2       TO 8E GENERATEO          88305730
      *                                                                88305740
02A0 0  6100                LOX     1 0       PRINT TABLE INOEX        88305750
02A1 0  6200                LOX     2 0                                88305760
      *                                                                88305770
02A2 0  080F                XIO     CN200     ISSUE INTERRUPT          88305780
02A3 0  1000                NOP                                        88305790
      *                                                                88305800
      *                RETURN FROM TRAP ROUTINES                       88305810
      *                                                                88305820
02A4 00 440004E2            BSI   L PRIPT     GO OUTPUT PRIO. SEQ      88305830
      *                                                                88305840
02A6 00 440004BE            BSI   L INTST     SET SPURIOUS INT AOR     88305850
      *                                                                88305860
02A8 00 C400018F            LO    L RTNNO     PREPARE SEQUENCE CK      88305870
02AA 0  9009                S       CN201                             88305880
02AB 00 04000191            STO   L SEQCK                             88305890
      *                                                                88305900
02AD 00 4C000177            BSC   L RTNRT     RETURN TO CONTROL        88305910
      *                                                                88305920
      *                ROUTINE THREE CONSTANTS                         88305930
      *                                                                88305940
02B0 00 00000000            OEC   0                                    88305950
02B2 0  0000          CN200 OC    0           INTERRUPT IOCC           88305960
02B3 0  0000                OC    0                                    88305970
      *                                                                88305980
02B4 0  0003          CN201 OC    3           CONSTANT 3               88305990
      *                                                                88306000
      ******************************************                       88306010
      *                 ROUTINE NUMBER FOUR                            88306020
      ******************************************                       88306030
      *                                                                88306040
0285 00 C4000933      INT03 LO    L INLVT+5   GET HEX 4                88306050
0287 00 D4000975            STO   L INM03+7   SET RTN NO. IN ERROR     88306060
0289 00 D400098A            STO   L INM04+7   *MESSAGES                88306070
      *                                                                88306080
028B 00 440004AA            BSI   L LVLST     GO SET UP TRAP AODRS     88306090
028D 0  C0C6                LO      CN105     SET PASS SWITCH          88306100
028C 0  00C6                STO     PSSW                              88306110
      *                                                                88306120
```

```
028F 00 C4000280      RT300 LD    L CN101                              88306130
02C1 0  D057                STO     CN300     SET 1ST PASS SW.         88306140
      *                                                                88306150
02C2 00 650002D0            LDX   L1 RT301    SET UP LOOP ON           88306160
02C4 00 60000521            STX   L1 LPERR+1  ERRDR RETURN             88306170
      *                                                                88306180
02C6 0  0859                XIO     MASKO     MASK UPPEP LEVELS        88306190
02C7 0  085A                XIO     MASK1     MASK LOWER LEVELS        88306200
      *                                                                88306210
02C8 00 6780018E      RT306 LDX   I3 LVLIX    SET UP INITIAL IOCC      88306220
02CA 00 CF00028C            LOD   L3 XIOCC    FOR LOWEST LEVEL         88306230
02CC 0  0851                STD     CN301                             88306240
      *                                                                88306250
02CO 00 67800198            LDX   I3 LVSAV    SET IX FOR NO.OF         88306260
02CF 0  7301                MOX     3 1       INTERRUPTS               88306270
      *                                                                88306280
02D0 00 C700092E      RT301 LO    L3 INLVT    GET REQUEST NUMBER       88306290
02D2 00 D4000979            STO   L INMQ3+11  SET IN ERROR             88306300
02D4 00 0400009BE           STO   L INM04+11  *MESSAGES                88306310
02D6 00 04000A39            STO   L INM13+11                           88306320
      *                                                                88306330
02D8 0  0845          RT302 XIO     CN301     ISSUE INTERRUPT          88306340
02D9 0  1000                NOP                                        88306350
      *                                                                88306360
02DA 0  C03E                LD      CN300     GET 1ST PASS SWITCH      88306370
02DB 0  4808                BSC     *                                  88306380
02DC 0  7011                MDX     RT303     NOT 1ST PASS INTR ER     88306390
      *                                                                88306400
02D0 0  73FF          RT305 MDX     3 -1      CHECK IF ALL LVLS        88306410
02DE 0  701A                MOX     RT304     NO                       88306420
02DF 0  C039                LO      CN300     YES                      88306430
02E0 0  4820                BSC     Z                                  88306440
02E1 0  7012                MDX     RT311     1ST PASS COMPL.CNTNU     88306450
02E2 00 74FF0285            MOX   L PSSW,-1   SKIP IF 500 PASSES       88306460
02E4 0  70DA                MOX     RT300                             88306470
      *                                                                88306480
      *                ROUTINE COMPLETED                               88306490
      *                                                                88306500
02E5 00 4400048E            BSI   L INTST     SET SPURIOUS INT ADR     88306510
      *                                                                88306520
02E7 00 C400018F            LO    L RTNNO     PREPARE SEQUENCE CK      88306530
02E9 0  9031                S       CN303                             88306540
02EA 00 04000191            STO   L SEQCK                             88306550
      *                                                                88306560
02EC 00 4C000177            BSC   L RTNRT     RETURN TO CONTROL        88306570
      *                                                                88306580
      *                REQ OID NOT INTRP MASK OFF                      88306600
      *                                                                88306610
      ******************************************                       88306620
02EE 00 440004F5      RT303 BSI   L ERRDR     LOG REQUEST FAILEO SRC   88306630
02F0 0  096E                DC      INM03     TO INTERRUPT             88306640
      ******************************************                       88306650
      *                                                                88306660
02F1 00 44000609            BSI   L SVINT                              88306670
02F3 0  70E9                MDX     RT305                             88306680
      *                                                                88306690
      *                SET UP FOR 2ND PASS                             88306700
      *                                                                88306710
02F4 0  1010          RT311 SLA     16                                88306720
02F5 0  D023                STO     CN300     CLEAR 1ST PASS SWITC     88306730
      *                                                                88306740
02F6 0  0820                XIO     UMSKO     UNMASK UPPER LEVELS      88306750
02F7 0  082E                XIO     UHSK1     UNMASK LOWER LEVELS      88306760
      *                                                                88306770
02F8 0  70CF                MDX     RT306     GO MAKE SECOND PASS      88306780
      *                                                                88306790
02F9 0  C024          RT304 LD      CN301     MODIFY IOCC FOR          88306800
```

INTERRUPT FUNCTION TEST

```
                    ABS                                          88300010
02BC                ORG     /3001                                88300020
                                                                 88300030
              *            ** PROGRAM WAITS **                   88300040
              *                                                  88300050
3001 0  0130        DC      WT1+1      WAIT 1                     88300069
              *                                                  88300070
              *            WAIT OCCURS AFTER PROGRAM             88300080
              *            HAS LOADED. PERFORM SETUP,            88300090
              *            ENTER DESIRED OPTIONS IN              88300100
              *            DATA ENTRY SWITCHES AND               88300110
              *            DEPRESS START.                        88300120
              *                                                  88300130
3002 0  0175        DC      WT2+1      WAIT 2                     88300140
              *                                                  88300150
              *            PROGRAM RAN TO COMPLETION.            88300160
              *            DEPRESSING START RETURNS              88300170
              *            PROGRAM TO WAIT 1.                    88300180
              *                                                  88300190
3003 0  0184      . DC      WT3+1      WAIT 3                     88300200
              *                                                  88300210
              *            PROGRAM SEQUENCE ERROR.               88300220
              *            SUPERVISOR SECTION OF                 88300230
              *            PROGRAM DECTED AN ERROR               88300240
              *            IN ROUTINE SEQUENCING.                88300250
              *                                                  88300260
3004 0  027F        DC      WT4+1      WAIT 4                     88300270
              *                                                  88300280
              *            ROUTINE 2 WAIT. TURN THE              88300290
              *            DISABLE INTERRUPT SWITCH              88300300
              *            ON AND DEPRESS THE START              88300310
              *            PUSHBUTTON.                           88300320
              *                                                  88300330
3005 0  0250        DC      WT5+1      WAIT 5                     88300340
              *                                                  88300350
              *            ROUTINE 2 WAIT. TURN THE              88300360
              *            DISABLE INTERRUPT SWITCH              88300370
              *            OFF. PROGRAM SHOULD START             88300380
              *            EXECUTION. IF IT DOES NOT             88300390
              *            (DUE TO INTERNAL INTERRUPT            88300400
              *            FAILURE)PRESS START BUTTON            88300410
              *            TO CONTINUE.                          88300420
              *                                                  88300430
3006 0  035C        DC      WT6+1    - WAIT 6                     88300440
              *                                                  88300450
              *            ROUTINE 5 WAIT. WRONG ILSW            88300460
              *            WAS SENSED ON STORAGE                 88300470
              *            PROTECT VIOLATE INTERRUPT.            88300480
              *            THE ILSW IS IN THE A REG.             88300490
              *            PUSH START TO CONTINUE.               88300500
              *                                                  88300510
3007 0  0386        DC      WT7+1      WAIT 7                     88300520
              *                                                  88300530
              *            ROUTINE 5 WAIT. SET MODE              88300540
              *            SWITCH TO TRACE AND PRESS             88300550
              *            START. PROGRAM WILL CHECK             88300560
              *            TRACE INTERRUPT.                      88300570
              *                                                  88500570
3008 0  038E        DC      WT8+1      WAIT 8                     88300570
              *                                                  88300500
              *            ROUTINE 5 WAIT. SET MODE              88300610
              *            SWITCH TO RUN AND DEPRESS             88300620
              *            START BUTTON.                         88300630
              *                                                  88300640
3009 0  03CF        DC      WT9+1      WAIT 9                     88300650
              *                                                  88300660
              *            ROUTINE 5 WAIT. SET MODE              88300670
              *            SWITCH TO TRACE AND PRESS             88300680
```

INTERRUPT FUNCTION TEST

```
              *            START. PROGRAM WILL MAKE              88300690
              *            AN INTERRUPT PRIORITY                 88300700
              *            CHECK IN TRACE MODE                   88300710
              *            OPERATION.                            88300720
              *                                                  88300730
300A 0  03D6        DC      WTA+1      WAIT A                     88300740
              *                                                  88300750
              *            ROUTINE 5 WAIT. SET MODE              88300760
              *            SWITCH TO RUN AND DEPRESS             88300770
              *            START BUTTON.                         88300780
              *                                                  88300790
300B 0  03E6        DC      WTB+1      WAIT B                     88300800
              *                                                  88300810
              *            ROUTINE 5 WAIT. DEPRESS               88300820
              *            C.E. INTERRUPT BUTTON.                88300830
              *            PROGRAM WILL MAKE AN                  88300840
              *            INTERRUPT PRIORITY CHECK              88300850
              *            WITH THE C.E. INTERRUPT               88300860
              *            LEVEL.                                88300870
              *                                                  88300880
300C 0  03F7        DC      WTC+1      WAIT C                     88300890
              *                                                  88300900
              *            ROUTINE 5 WAIT. SET THE               88300910
              *            DISABLE INTERRUPT SWITCH              88300920
              *            ON,THEN DEPRESS THE C.E.              88300930
              *            INTERRUPT AND CONSOLE                 88300940
              *            INTERRUPT BUTTONS. NO                 88300950
              *            INTERRUPT SHOULD OCCUR.               88300960
              *            THEN SET TRACE MODE AND               88300970
              *            DEPRESS START.                        88300980
              *                                                  88300990
300D 0  040A        DC      WTD+1      WAIT D                     88301000
              *                                                  88301010
              *            ROUTINE 5 WAIT. SET THE               88301020
              *            MODE SWITCH TO RUN AND                88301030
              *            DEPRESS START.                        88301040
              *                                                  88301050
300E 0  040E        DC      WTE+1      WAIT E                     88301060
              *                                                  88301070
              *            ROUTINE 5 WAIT. TURN THE              88301080
              *            DISABLE INTERRUPT SWITCH              88301090
              *            OFF. PROGRAM SHOULD CONTI-            88301100
              *            NUE. IF IT DOES NOT(DUE               88301110
              *            TO DISABLE INTERRUPT IN-              88301120
              *            OPERATIVE* THEN PUSH START            88301130
              *            TO CONTINUE.                          88301140
              *                                                  88301150
300F 0  045D        DC      WTF+1      WAIT F                     88301160
              *                                                  88301170
              *            ROUTINE 6 WAIT. SET MODE              88301180
              *            SWITCH TO TRACE AND PRESS             88301190
              *            START BUTTON. PROGRAM WILL            88301200
              *            CHECK TRACE MODE OPERATION            88301210
              *                                                  88301220
3010 0  0475        DC      WT10+1     WAIT 10                    88301230
              *                                                  88301240
              *            ROUTINE 6 WAIT. SET MODE              88301250
              *            SWITCH TO RUN AND DEPRESS             88301260
              *            START BUTTON.                         88301270
              *                                                  88301280
3011 0  051F        DC      WT11+1     WAIT 11                    88301290
              *                                                  88301300
              *            HALT ON ERROR OPTION                  88301310
              *            REQUESTED. DEPRESS START              88301320
              *            BUTTON TO CONTINUE.                   88301330
              *                                                  88301340
3012 0  0538        DC      WT12+1     WAIT 12                    88301350
              *                                                  88301360
```

```
                        *                    1443 NOT REAOY. MAKE 1443      88301370
                        *                    REAOY ANO OEPRESS START.       88301380
                        *                                                   88301390
5013 0  053A       DC   WT13+1    WAIT 13                                   88301400
                        *                                                   88301410
                        *                    1443 8USY. THIS IS AN          88301420
                        *                    ERROR CONOITION. REMEOY        88301430
                        *                    CAUSE,THEN PUSH START TO       88301440
                        *                    CONTINUE.                      88301450
                        *                                                   88301460
3014 0  0553       DC   WT14+1    WAIT 14                                   88301470
                        *                                                   88301480
                        *                    1816/1053 NUMBER 1 NOT         80301490
                        *                    REAOY. MAKE REAOY ANO PUSH     88301500
                        *                    START TO CONTINUE.             88301510
                        *                                                   88301520
3015 0  06C8       DC   WT15+1    WAIT 15                                   88301530
                        *                                                   88301540
                        *                    THIS WAIT WILL OCCUR           88301550
                        *                    OURING ROUTINE 2 IF OPTION     88301560
                        *                    BIT SWITCH 8 IS NOT ON,ANO     88301570
                        *                    AN ILSW ERROR IS OETECTEO      88301580
                        *                    ON A PROG.GENERATEO INTER-     88301590
                        *                    RUPT. THE ILSW IS IN THE       88301600
                        *                    A REG. DEPRESS START TO        88301610
                        *                    CONTINUE.                      88301620
                        *                                                   88301630
3016               ORG  300                                                 88301640
012C 0  8300       OC   /8300     P1D                                       8830165C
                        *              *                                    88301660
                        *         * INTERRUPT FUNCT TEST *                  88301670
                        *         *    ** INTRP **       *                  88301680
                        *         *                      *                  88301690
                        *         *************.****************            88301700
                        *                                                   88301710
                        *              CONTROL ROUTINE                      89301720
                        *                                                   88301730
0120 00 4400048E   START BSI L INTST    SET SPURIOUS INT ADR               88301740
                        *                                                   88301750
012F 0  C864            LDD  CNCO2     SET RESTART AOORESS                  88301760
0130 00 0C000026       STD L /0026     IN LOCATION 26                      88301770
0132 0  C863            LDD  CNCO3                                          88301780
0133 00 DC000000       STO L /0000                                         88301790
                        *                                                   88301800
0135 0  1010           SLA  16        CLEAR BIT SWITCH                     88301810
0136 0  0058           STO  8SWOO      *READ IN AREA ANO BY                88301820
0137 0  0061           STO  RUNSW      *PASS MAN CKS SWITCH                88301830
0138 00 04000428       STO L CN400     CLEAR TRACE INOICATO               88301840
013A 0  2C40           OC   /2C40      INSURE SP AREA IS                   88301850
0138 0  0429           OC   CN401      *CLEAR                              88301860
                        *                                                   88301870
013C 0  3001      WT1  WAIT  1         ENTER PROG.OPTIONS                  88301880
                        *                                                   88301890
013D 0  084C           XIO  8SWO       REAO BIT SWITCHES                   88301900
                        *                                                   88301910
013E 0  10A0      CONO1 SLT  32        CLEAR A ANO Q                       88301920
013F 0  C052           LD   8SWOO      GET OPTION ENTRY                    88301930
0140 0  18C8           RTE  8                                              88301940
0141 0  1010           SLA  16                                             88301950
0142 0  1081           SLT  1                                              08301960
0143 0  0055           STO  RUNSW      SET RUN SWITCH                      88301970
0144 0  1010           SLA  16                                             88301980
0145 0  1081           SLT  1                                              88301990
0146 0  0053           STO  OPINO      SET OUTPUT OEVICE IO                88302000
                        *                                                   88302010
                        *                                                   88302020
                        *              OETERMINE NUMBER CF LEVELS          88302030
                        *                                                   88302040
```

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0147 0  C04A           LO   BSWOO     GET OPTION ENTRIES                  88302050
0148 0  4810           BSC  -         SKIP IF BIT 0 ON                    88302060
0149 0  7004           MOX  CTRL1     BRANCH ON NOT BIT 0                 88302070
014A 0  6311           LOX  3 17      SET LEVEL INOICATOR                 88302080
014B 0  684C           STX  3 LVSAV   *FOR 18 LEVELS                      88302090
014C 0  6302           LOX  3 2       SET INDEX FOR 18 LVL               88302100
014D 0  700A           MOX  CTRL3     CONTINUE                           88302110
014E 0  1001      CTRL1 SLA  1         CHECK FOR BIT 1                    88302120
014F 0  4810           BSC  -         SKIP IF BIT 1 ON                    88302130
0150 0  7004           MOX  CTRL2     BRANCH ON NOT BIT 1                 88302140
0151 0  6317           LOX  3 23      SET LEVEL INOICATOR                 88302150
0152 0  6845           STX  3 LVSAV   *FOR 24 LEVELS                      88302160
0153 0  6304           LOX  3 4       SET INDEX FOR 24 LVL               88302170
0154 0  7003           MOX  CTRL3     CONTINUE                           88302180
0155 0  630B      CTRL2 LOX  3 11      SET LEVEL INDICATOR                88302190
0156 0  6841           STX  3 LVSAV   *FOR 12 LEVELS                      8830220G
0157 0  6300           LOX  3 0       SET INOEX FOR 12 LVL               88302210
0158 0  6835      CTRL3 STX  3 LVLIX   SAVE INOEX SETTING                 88302220
                        *                                                   88302230
0159 0  I010      CON06 SLA  16                                           88302240
015A 0  0034           SfO  RTNNO     CLEAR ROUTN. NUMBER                 88302250
                        *                                                   88302260
015B 0  082C      CNTRL XIO  SNSWS     REAO SENSE SWITCHES                88302270
015C 0  1005           SLA  5         CHECK FOR LOOP RTN                  88302280
015D 0  1800           SRA  13                                           88302290
015E 0  4808           BSC  +         SKIP IF LOOP ROUTINE               88302300
015F 0  7002           MOX  *+2                                          88302310
0160 0  002E           STO  RTNNO                                        88302320
0161 0  7006           MOX  CON05+2    GO EXECUTE ROUTINE                 88302330
0162 0  C02C           LO   RTNNO                                        88302340
0163 0  902C           S    SIX       CK IF ALL RTNS RUN                 88302350
0164 0  4818           BSC  +-                                           88302360
0165 0  7006           MOX  CON03     ALL ROUTINES HAVE RN               88302370
0166 00 7401018F  CON05 MOX L RTNNO,1  AOO 1 TO RTN.NO.                  88302380
0168 00 6580018F       LOX  I1 RTNNO                                     88302390
016A 00 4080019A       BSC  I1 RTN-1   EXIT TO ROUTINE                   88302400
                        *                                                   88302410
                        *              ALL ROUTINES HAVE RUN              88302420
                        *                                                   88302430
016C 0  0810      CON03 XIO  BSWO      REAO BIT SWITCHES                  88302440
016D 0  C024           LD   BSWOO     GET BIT SWITCHES                   88302450
016E 0  1804           SRA  4         CK LOOP PROGRAM                    88302460
016F 0  4804           BSC  E                                            88302470
0170 0  70E8           MOX  CON06     LOOP PROGRAM                       88302480
                        *                                                   88302490
                        ********************************************       88302500
0171 00 44000523       BSI  L LOG     PRINT PROGRAM        SRC           88302510
0173 0  09C9           OC   INM07      IS COMPLETE                       88302520
                        ********************************************       88302530
                        *                                                   88302540
0174 0  3002      WT2  WAIT  2         PROGRAM COMPLETE                  88302550
0175 00 4C000120       BSC  L START    PROGRAM RESTART                   88302560
                        *                                                   88302570
                        *              *** ROUTINE RETURN ***            88302580
                        *                                                   88302590
0177 0  C019      RTNRT LO   SEQCK     SEQUENCE CHECK                    88302600
0178 0  4818           BSC  +-                                           88302610
0179 0  70E1           MOX  CNTRL     CHECK OK                          88302620
                        *                                                   88302630
017A 00 678001BF       LOX  I3 RTNNO                                     88302640
017C 00 C700092F       LD   L3 INLVT+1  GET HEX.VALUE OF RTN             88302650
017E 00 D4000A2C       STO  L INM12+15  SET IN MESSAGE                   88302660
                        *                                                   88302670
                        ********************************************       88302680
0180 00 44000523       BSI  L LOG     PRINT SEQUENCE       SRC           88302690
0182 0  0A10           DC   INM12      ERROR                             88302700
                        ********************************************       88302710
                        *                                                   88302720
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0183 0  3003        WT3   WAIT  3            SEQUENCE ERROR            BB302730
0184 00 4C000120          BSC   L   START                            BB302740
                    *                                                 BB302750
                    *               CONTROL ROUTINE CONSTANTS         BB302760
                    *                                                 BB302770
0186 00 00000000          OEC   0                                    BB302780
0188 0  0000        SNSWS OC    /0000        REAO SENSE SW IOCC       BB302790
0189 0  0760              OC    /0760                                 BB302800
018A 00 0192        BSWO  OC    BSWOO        REAO BIT SWITCH IOCC     BB302810
018B 0  0240              OC    /0240                                 BB302820
                    *                                                 BB302830
018C 0  0193        BSW1  OC    BSWO1        REAO BIT SWITCH IOCC     BB302840
018D 0  0240              OC    /0240                                 BB302850
                    *                                                 BB302860
018E 0  0000        LVLIX OC    0            NO.OF LEVELS INOEX       BB302870
018F 0  0000        RTNNO OC    0            ROUTINE NUMBER           BB302880
0190 0  0006        SIX   OC    6            CONSTANT 6               BB302890
0191 0  0000        SEQCK OC    0            SEQUENCE CHECK SAVE      BB302900
                    *                                                 BB302910
0192 0  0000        BSWOO OC    0            BIT SW. CONTROL OATA     BB302920
0193 0  0000        BSWO1 OC    0            NO INTERRUPT LEVELS      BB302930
                    *                                                 BB302940
0194 0  4C00        CNCO2 OC    /4C00        RESTART INSTRUCTIONS     BB302950
0195 0  0120              OC    START                                BB302960
0196 0  7025        CNCO3 OC    /7025                                 BB302970
0197 0  4400              OC    /4400                                 BB302980
0198 0  0000        LVSAV OC    0            NO.INTR.LVLS SAVE        BB302990
0199 0  0000        RUNSW OC    0                                     BB303000
019A 0  0000        OPINO OC    0            OUTPUT OEVICE INOCTR     BB303010
                    *                                                 BB303020
                    *               ROUTINE AOORESSES                BB303030
                    *                                                 BB303040
019B 0  01A6        RTN   OC    INTOO        ROUTINE 1                BB303050
019C 0  01FE              OC    INTO1        ROUTINE 2                BB303060
019D 0  0292              OC    INTO2        ROUTINE 3                BB303070
019E 0  02B5              OC    INTO3        ROUTINE 4                BB303080
019F 0  0328              OC    INTO4        ROUTINE 5                BB303090
01A0 0  0446              OC    INTO5        ROUTINE 6                BB303100
01A1 0  01A2              OC    INTER        INVALIO ENTRY            BB303110
                    *                                                 BB303120
                    ********************************************      BB303130
01A2 00 44000523    INTER BSI   L   LOG      PRINT INVALIO ENTRY SRC  BB303140
01A4 0  0B9F              OC    INM25                                 BB303150
                    ********************************************      BB303160
                    *                                                 BB303170
01A5 0  7096              MOX   WT1          RETURN TO WAIT 1         BB303180
                    *                                                 BB303190
                    ********************************************      BB303200
                    *               ROUTINE NUMBFR ONE               BB303210
                    ********************************************      BB303220
                    *                                                 BB303230
01A6 00 0C000320    INTOO XIO   L   MASKO    MASK INTERRUPTS          BB303240
01A8 00 0C000322          XIO   L   MASK1                             BB303250
                    *                                                 BB303260
01AA 0  631B              LOX   3   27       SET INTERRUPT            BB303270
01AB 00 C40001F5          LO    L   VCTOR    *TRANSFER VECTOR         BB303280
01AD 00 07000007          STO   L3  7                                BB303290
01AF 0  73FF              MOX   3   -1                                BB303300
01B0 0  70FC              MOX   *-4                                   BB303310
                    *                                                 BB303320
01B1 0  C848              LOO   XIO          SET UP MESSAGE           BB303330
01B2 00 0C000B86          STO   L   INM23+22                         BB303340
01B4 00 CC00028C          LOO   L   XIOCC    SET UP IOCC             BB303350
01B6 00 0C00028A          STO   L   ISINT                            BB303360
01B8 0  630C              LOX   3   12       SET INTRP INOEX         BB303370
01B9 00 650001C5          LOX   L1  PL1+1    SET UP TRAP ROUTINF     BB303380
01BB 00 60000608          STX   L1  PLEXT+1  RETURN                  BB303390
01BD 00 0C000324          XIO   L   UMSKO    UNMASK INTERRUPTS       BB303400
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01BF 00 0C000326          XIO   L   UMSK1                             BB303410
01C1 00 0C00028A    INO01 XIO   L   ISINT    ISSUE INTRP CHECK        BB303420
01C3 0  1000              NOP            *POLL ON XIF                 BB303430
01C4 0  701C        PL1   MOX   FAIL       INTERRUPT FAILEO          BB303440
01C5 0  C030              LO    ICTR       CHECK FOR PROPER 1        BB303450
01C6 0  F030              EOR   XIOCK      *COUNT ON INTERRUPT       BB303460
01C7 00 4C2001E9          BSC   L   POLER,Z  BRANCH ON WRONG I CT    BB303470
                    *                                                 BB303480
01C9 0  C832              LOO   BSI        SET UP MESSAGE            BB303490
01CA 00 0C000B86          STO   L   INM23+22                         BB303500
01CC 00 65000106          LOX   L1  PL2+1    SET UP TRAP ROUTINE     BB303510
01CE 00 60000608          STX   L1  PLEXT+1  *RETURN                 BB303520
                    *                                                 BB303530
01D0 00 0C00028A          XIO   L   ISINT    ISSUE INTRP  CHECK      BB303540
01D2 0  4000              BSI   *          *FOLL ON BSI             BB303550
01D3 0  1000              NOP                                        BB303560
01D4 0  1000              NOP                                        BB303570
01D5 0  7004        PL2   MOX   *+4        BRNCH IF INTRP FAILO     BB303580
01D6 0  C01F              LO    ICTR       CHECK FCR PROPER I       BB303590
01D7 0  F020              EOR   BSICK      *COUNT ON INTERRUPT      BB303600
01D8 00 4C2001E9          BSC   L   POLER,Z  BRANCH ON WRONG 1 CT    BB303610
                    *                                                 BB303620
01DA 0  C0B4        INO02 LO    RTNNO      PREPARE SEQUENCE CK      BB303630
01DB 0  F010              EOR   CN001                                BB303640
01DC 0  00B4              STO   SEQCK                                BB303650
01DD 00 4400048E          BSI   L   INTST    SETUP XFER VECTORS  SRC  BB303660
                    *                                                 BB303670
01DF 00 4C000177          BSC   L   RTNRT    RETURN TO CONTROL       BB303680
01E1 00 C400028A    FAIL  LO    L   ISINT    MOOIFY IOCC FOR         BB303690
01E3 0  1001              SLA   1          *NEXT INTERRUPT          BB303700
01E4 00 D400028A          STO   L   ISINT                            BB303710
01E6 0  73FF              MOX   3   -1                                BB303720
01E7 0  7009              MOX   INO01      CONTINUE                  BB303730
01E8 0  70F1              MOX   INO02      ENO ROUTINE               BB303740
                    *                                                 BB303750
01E9 00 650001A6    POLER LOX   L1  INTOO    SET LOOP ERROR          BB303760
01EB 00 60000521          STX   L1  LPERR+1  *RETURN                 BB303770
                    *                                                 BB303780
                    ********************************************      BB303790
01ED 00 440004F5          BSI   L   ERROR    PRINT POLL ERROR   SRC  BB303800
01EF 0  CB70              OC    INM23      MESSAGE TAG               BB303810
01F0 00 44000523          BSI   L   LOG      PRINT FIX COMMANO       BB303820
01F2 0  0B89              OC    INM24                                BB303830
                    ********************************************      BB303840
                    *                                                 BB303850
01F3 00 4C00013C          BSC   L   WT1      GO TO WAIT 1            BB303860
                    *                                                 BB303870
                    *               ROUTINE 1 CONSTANTS              BB303880
                    *                                                 BB303890
01F5 0  0601        VCTOR OC    POLL       TRANSFER VECTOR           BB303900
01F6 0  0000        ICTR  OC    0          I COUNT ON INTERRUPT      BB303910
01F7 0  01C4        XIOCK OC    PL1        XIO CHECK CONSTANT        BB303920
01F8 0  01D5        BSICK OC    PL2        BSI CHECK CONSTANT        BB303930
01F9 0  0001        CN001 OC    1          CONSTANT 1                BB303940
01FA  0000              BSS   E                                      BB303950
01FA 0  0017        XIO   OC    /0017      X                         BB303960
01FB 0  3926              OC    /3926      IO                        BB303970
01FC 0  0032        BSI   OC    /0032      B                         BB303980
01FD 0  1239              OC    /1239      SI                        BB303990
                    *                                                 BB304000
                    ********************************************      BB304010
                    *               ROUTINE NUMBER TWO              BB304020
                    ********************************************      BB304030
                    *                                                 BB304040
01FE 00 C40C0931    INTO1 LO    L   INLVT+3  GET HEX 2               BB304050
0200 00 04000975          STO   L   INM03+7  SET ROUTINE NUMBER      BB304060
0202 00 0400098A          STO   L   INM04+7  IN ERROR MESSAGES       BB304070
0204 00 040009A1          STO   L   INM05+7                          BB304080
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INTERRUPT FUNCTION TEST

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0206 00 0400098B          STO   L  INM06+7                     88304090
                    *                                          88304100
0208 00 440004AA          BSI   L  LVLST     GO SET INTERPT AORSS  88304110
                    *                                          88304120
020A 00 C4000280          LD    L  CN101                       88304130
020C 00 04000281          STO   L  CN102     SET 1ST PASS SWITCH  88304140
020E 00 C4000284          LD    L  CN105     SET PASS SWITCH   88304150
0210 00 04000285          STO   L  PSSW                        88304160
                    *                                          88304170
0212 00 C4000282  RT100 LD    L  CN103                        88304180
0214 00 04000286          STO   L  ECKSW     SE LVL ER CHECK SW.  88304190
0216 00 65800198          LDX   I1 LVSAV                       88304200
0218 0  7101              MDX      1 1        IX 1 = NO.LEVELS +1  88304210
0219 00 66800198          LDX   I2 LVSAV                       88304220
021B 0  7201              MDX      2 1        IX 2 = NO.LEVELS +1  88304230
021C 00 67000226          LDX   L3 RT101                       88304240
021E 00 6F000521          STX   L3 LPERR+1   SET LOOP ERR RETURN  88304250
                    *                                          88304260
0220 00 6780018E          LDX   I3 LVLIX     SET UP INTERRUPT  88304270
0222 00 CF00028C          LDD   L3 XIOCC     IOCC              88304280
0224 00 0C00028A          STO   L  ISINT                       88304290
                    *                                          88304300
0226 00 C600092E  RT101 LD    L2 INLVT     SET REQUEST NUMBER  88304310
0228 00 04000979          STO   L  INM03+11  IN ERROR MESSAGES  88304320
022A 00 0400098E          STO   L  INM04+11                    88304330
022C 00 040009A5          STO   L  INM05+11                    88304340
022E 00 04000A4F          STO   L  INM14+10                    88304350
                    *                                          88304360
0230 0  0859              XIO      ISINT     ISSUE PROGMO INTRPT  88304370
0231 0  1000              NOP                                  88304380
0232 00 44000607          BSI   L  SERVC     PRGM OPERATION PROT SRC  88304390
                    *                                          88304400
0234 00 C4000281  RT109 LD    L  CN102     REQUEST OIO NOT INRP  88304410
0236 0  4818              BSC      +                           88304420
0237 0  7003              MDX      RT104     NOT 1ST PASS  OK   88304430
                    *                                          88304440
          **********************************************       88304450
0238 00 440004F5          BSI   L  ERROR     PRINT REQUEST FAILEO SRC  88304460
023A 0  096E              OC       INM03     TO INTERRUPT      88304470
          **********************************************       88304480
                    *                                          88304490
                    *          RETURN FROM TRAP ROUTINES       88304500
                    *                                          88304510
023B 0  71FF    RT104 MDX      1 -1       CK IF ALL LVLS DONE  88304520
023C 0  701C              MDX      RT105     NO                88304530
023D 00 74FF0286          MDX   L  ECKSW,-1  LEVEL ERROR CHECKED  88304540
023F 0  7027              MDX      RT106     NO                88304550
0240 00 74FF0285          MDX   L  PSSW,-1   SKIP IF 500 PASSES  88304560
0242 0  70CF              MDX      RT100                       88304570
                    *                                          88304580
                    *          1ST PASS COMPLETE CHECK IF      88304590
                    *          MODE IS RUN WITHOUT STOPS       88304600
                    *                                          88304610
0243 00 C4000199          LD    L  RUNSW     GET RUN SWITCH    88304620
0245 00 4C200250          BSC   L  RT110,Z   RUN WITH OUT STOPS  88304630
                    *                                          88304640
                    *          RUN NORMAL PROGRAM MODE         88304650
                    *                                          88304660
0247 0  C039              LD       CN102     GET 1ST PASS SWITCH  88304670
0248 0  4820              BSC      Z                           88304680
0249 0  702F              MDX      RT107     1ST PASS          88304690
                    *                                          88304700
                    *          ROUTINE ONE COMPLETE            88304710
                    *                                          88304720
024A 00 440004A0          BSI   L  NEST1     SET NEST ADDRESSES  88304730
                    *                                          88304740
          **********************************************       88304750
024C 00 44000523          BSI   L  LOG       PRINT TURN DISABLE  SRC  88304760
```

INTERRUPT FUNCTION TEST

```
024E 0  095E              OC       INM02     SWITCH OFF        88304770
          **********************************************       88304780
                    *                                          88304790
024F 0  3005              WT5   WAIT     5        TURN OISABLE SW OFF  88304800
                    *                                          88304810
0250 00 C400018F  RT110 LD    L  RTNNO     PREPARE SEQUENCE CK  88304820
0252 0  902F              S        CN103                       88304830
0253 00 04000191          STO   L  SEQCK                       88304840
                    *                                          88304850
0255 00 4400048E          BSI   L  INTST     SET SPURIOUS INT ADR  88304860
                    *                                          88304870
0257 00 4C000177          BSC   L  RTNRT     RETURN TO CONTROL  88304880
                    *                                          88304890
0259 0  C030    RT105 LD       ISINT     GET IOCC AODRS WO  88304900
025A 0  4808              BSC      +         CK BIT 0 = 1      88304910
025B 0  7004              MDX      RT108     BIT 0 = 1         88304920
025C 0  1001              SLA      1                           88304930
025D 0  002C              STO      ISINT                       88304940
025E 0  72FF              MDX      2 -1      SET FOR NEXT LVL. NO  88304950
025F 0  70C6              MDX      RT101     CONTINUE          88304960
                    *                                          88304970
0260 0  C02A    RT108 LD       ISINT+1   CLEAR BIT 15 FROM  88304980
0261 0  901E              S        CN101     IOCC CONTROL WORD  88304990
0262 0  0028              STO      ISINT+1                     88305000
0263 0  C01C              LD       CN101     SET BIT 13 IN IOCC  88305010
0264 0  1092              SLA      2         ADDRESS WORD      88305020
0265 0  0024              STO      ISINT                       88305030
0266 0  70F7              MDX      RT105+5                     88305040
                    *                                          88305050
0267 0  72FF    RT106 MDX      2 -1                          88305060
0268 0  1000              NOP                                  88305070
0269 00 C600092E          LD    L2 INLVT     LEVEL ERROR       88305080
026B 00 04000979          STO   L  INM03+11  SET IN ERROR      88305090
026D 00 0400098E          STO   L  INM04+11  *MESSAGES         88305100
026F 00 040009A5          STO   L  INM05+11                    88305110
0271 00 04000A4F          STO   L  INM14+10                    88305120
0273 00 67000277          LDX   L3 RT106+16                    88305130
0275 00 6F000521          STX   L3 LPERR+1   LOOP ERROR RETURN  88305140
                    *                                          88305150
0277 0  0100              OC       /0100     ILLEGAL OP CODE   88305160
                    *                                          88305170
                    *          ILLEGAL OP CODE OIO             88305180
                    *          NOT INTERRUPT                   88305190
                    *                                          88305200
0278 0  70B8              MDX      RT109                       88305210
                    *                                          88305220
0279 0  1010    RT107 SLA      16                            88305230
027A 0  0006              STO      CN102     CLEAR 1ST PASS SW.  88305240
                    *                                          88305250
          **********************************************       88305260
027B 00 44000523          BSI   L  LOG       PRINT TURN DISABLE  SRC  88305270
027D 0  0949              OC       INM01     SWITCH ON         88305280
          **********************************************       88305290
                    *                                          88305300
027E 0  3004              WT4   WAIT     4        SET OISABLE SW ON  88305310
                    *                                          88305320
027F 0  708E              MDX      RT100-4   GO MAKE 2ND PASS  88305330
                    *                                          88305340
                    *                                          88305350
                    *          ROUTINE TWO CONSTANTS           88305360
                    *                                          88305370
0280 0  0001    CN101 OC       1                            88305380
0281 0  0000    CN102 OC       0         1ST PASS SWITCH   88305390
0282 0  0002    CN103 OC       2                            88305400
0283 0  0607    CN104 OC       SERVC                         88305410
0284 0  01F4    CN105 OC       /01F4     PASS CONSTANT     88305420
0285 0  0000    PSSW  OC       0         PASS SWITCH       88305430
                    *                                          88305440
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0286 0  0000     ECKSW OC    0            LEVEL ERR CHECK SW.        BB305450
                   *                                                 BB305460
0288 00 00000000       OEC    0                                      BB305470
028A 0  0000     ISINT OC    0            PROGRAMEO INTERRUPT        BB305480
028B 0  0000           OC    0            IOCC                       BB305490
                   *                                                 BB305500
028C 0  0010     XIOCC OC    /0010        12 LEVELS OF INTRPT        BB305510
028D 0  04A0           OC    /04A0                                   BB305520
028E 0  1000           OC    /1000        18 LEVELS OF INTRP         BB305530
028F 0  04A1           OC    /04A1                                   BB305540
0290 0  0040           OC    /0040        24 LEVELS OF INTRPT        BB305550
0291 0  04A1           OC    /04A1                                   BB305560
                   *                                                 BB305570
                   *                                                 BB305580
                   ****************************************          BB305590
                   *          ROUTINE NUMBER THREE                   BB305600
                   ****************************************          BB305610
                   *                                                 BB305620
0292 00 C4000932  INT02 LO  L INIVT+4     GET HEX 3                  BB305630
0294 00 04000A5F        STO L INMI5+7     SET IN LOG MESSAGE         BB305640
                   *                                                 BB305650
0296 00 4400048B        BSI L PRIST       GO SET TRAP AOORESS SRC    BB305660
                   *                                                 BB305670
0298 00 6580018E        LOX I1 LVLIX      SET IOCC FOR LOWEST        BB305680
029A 00 C000028C        LOO L1 XIOCC      INTERRUPT LEVEL            BB305690
029C 0  0B15            STO    CN200                                 BB305700
                   *                                                 BB305710
029D 00 67B00198        LOX I3 LVSAV      NUMBER OF INTERRUPTS       BB305720
029F 0  7302            MOX 3 2           TO 8E GENERATEO            BB305730
                   *                                                 BB305740
02A0 0  6100            LOX 1 0           PRINT TABLE INOEX          BB305750
02A1 0  6200            LOX 2 0                                      BB305760
                   *                                                 BB305770
02A2 0  080F            XIO    CN200      ISSUE INTERRUPT            BB305780
02A3 0  1000            NOP                                          BB305790
                   *                                                 BB305800
                   *       RETURN FROM TRAP ROUTINES                 BB305810
                   *                                                 BB305820
02A4 00 440004E2        BSI L PRIPT       GO OUTPUT PRIO. SEQ        BB305830
                   *                                                 BB305840
02A6 00 4400048E        BSI L INTST       SET SPURIOUS INT AOR       BB305850
                   *                                                 BB305860
02A8 00 C40001BF        LO  L RTLNO       PREPARE SEQUENCE CK        BB305870
02AA 0  9009            S      CN201                                 BB305880
02AB 00 04000191        STO L SEQCK                                  BB305890
                   *                                                 BB305900
02AD 00 4C000177        BSC L RTNRT       RETURN TO CONTROL          BB305910
                   *                                                 BB305920
                   *          ROUTINE THREE CONSTANTS                BB305930
                   *                                                 BB305940
02B0 00 00000000        OEC    0                                     BB305950
02B2 0  0000     CN200 OC     0           INTERRUPT IOCC             BB305960
02B3 0  0000           OC     0                                      BB305970
                   *                                                 BB305980
02B4 0  0003     CN201 OC     3           CONSTANT 3                 BB305990
                   ****************************************          BB306000
                   ****************************************          BB306010
                   *          ROUTINE NUMBER FOUR                    BB306020
                   ****************************************          BB306030
                   *                                                 BB306040
02B5 00 C4000933  INT03 LO  L INLVT+5     GET HEX 4                  BB306050
02B7 00 04000975        STO L INM03+7     SET RTN NO. IN ERROR       BB306060
02B9 00 0400098A        STO L INM04+7     *MESSAGES                  BB306070
                   *                                                 BB306080
02BB 00 440004AA        BSI L LVLST       GO SET UP TRAP AOORS       BB306090
02BD 0  C0C6            LO     CN105       SET PASS SWITCH            BB306100
02BC 0  00C6            STO    PSSW                                  BB306110
                   *                                                 BB306120
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028F 00 C40002B0  RT300 LO  L CN101                                 BB306130
02C1 0  0057            STO    CN300       SET 1ST PASS SW.          BB306140
                   *                                                 BB306150
02C2 00 65000200        LOX L1 RT3O1       SET UP LOOP ON            BB306160
02C4 00 60000521        STX L1 LPERR+1     ERROR RETURN              BB306170
                   *                                                 BB306180
02C6 0  0859            XIO    MASKO       MASK UPPEP LEVELS         BB306190
02C7 0  085A            XIO    MASK1       MASK LOWER LEVELS         BB306200
                   *                                                 BB306210
02C8 00 67B001BE  RT306 LOX I3 LVLIX       SET UP INITIAL IOCC       BB306220
02CA 00 CF00028C        LOO L3 XIOCC       FOR LOWEST LEVEL          BB306230
02CC 0  0B51            STO    CN301                                 BB306240
                   *                                                 BB306250
02CO 00 67B0019B        LOX I3 LVSAV       SET IX FOR NO.OF          BB306260
02CF 0  7301            MOX 3 1            INTERRUPTS                BB306270
                   *                                                 BB306280
02D0 00 C700092E  RT301 LO  L3 INLVT       GET REQUEST NUMBER        BB306290
02D2 00 04000979        STO L INMQ3+11     SET IN ERROR              BB306300
02D4 00 0400009BE       STO L INM04+11     *MESSAGES                 BB306310
02D6 00 04000A39        STO L INM13+11                               BB306320
                   *                                                 BB306330
02D8 0  0B45     RT302 XIO    CN301        ISSUE INTERRUPT           BB306340
02D9 0  1000           NOP                                           BB306350
                   *                                                 BB306360
02DA 0  C03E           LO    CN300         GET 1ST PASS SWITCH       BB306370
02DB 0  4B0B           BSC   +                                       BB306380
02DC 0  7011           MOX   RT303         NOT 1ST PASS INTR ER      BB306390
                   *                                                 BB306400
02DD 0  73FF     RT305 MOX 3 -1            CHECK IF ALL LVLS         BB306410
02DE 0  701A           MOX   RT304         NO                        BB306420
02DF 0  C039           LO    CN300         YES                       BB306430
02E0 0  4B20           BSC   Z                                       BB306440
02E1 0  7012           MOX   RT311         1ST PASS COMPL.CNTNU      BB306450
02E2 00 74FF02B5       MDX L PSSW,-1       SKIP IF 500 PASSES        BB306460
02E4 0  700A           MOX   RT300                                   BB306470
                   *                                                 BB306480
                   *          ROUTINE COMPLETEO                      BB306490
                   *                                                 BB306500
02E5 00 4400048E       BSI L INTST         SET SPURIOUS INT AOR      BB306510
                   *                                                 BB306520
02E7 00 C40001BF       LO  L RTNNO         PREPARE SEQUENCE CK       BB306530
02E9 0  9031           S      CN303                                 BB306540
02EA 00 04000191       STO L SEQCK                                   BB306550
                   *                                                 BB306560
02EC 00 4C000177       BSC L RTNRT         RETURN TO CONTROL         BB306570
                   *                                                 BB306580
                   *      REQ OIO NOT INTRP MASK OFF                 BB306600
                   *                                                 BB306610
                   ****************************************          BB306620
02EE 00 440004F5  RT303 BSI L ERROR        LOG REQUEST FAILED   SRC  BB306630
02F0 0  096E           OC    INM03         TO INTERRUPT              BB306640
                   ****************************************          BB306650
                   *                                                 BB306660
02F1 00 44000609       BSI L SVINT                                   BB306670
02F3 0  70E9           MOX   RT305                                   BB306680
                   *                                                 BB306690
                   *          SET UP FOR 2NO PASS                    BB306700
                   *                                                 BB306710
02F4 0  1010     RT311 SLA   16                                      BB306720
02F5 0  0023           STO   CN300         CLEAR 1ST PASS SWITC      BB306730
                   *                                                 BB306740
02F6 0  0B20           XIO   UMSKO         UNMASK UPPER LEVELS       BB306750
02F7 0  0B2E           XIO   UHSK1         UNMASK LOWER LEVELS       BB306760
                   *                                                 BB306770
02F8 0  70CF           MOX   RT306         GO MAKE SECONO PASS       BB306780
                   *                                                 BB306790
02F9 0  C024     RT304 LO    CN301         MOOIFY IOCC FOR           BB306800
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INTERRUPT FUNCTION TEST

```
02FA 0  4808          BSC    *         NEXT INTERRUPT        BB306810
02FB 0  7003          MOX    RT307                           BB306820
02FC 0  1001          SLA    1                               BB306830
02FD 0  0020          STO    CN301     GO ISSUE NEXT INTRPT  BB306840
02FE 0  7001          MOX    RT301                           BB306850
                  *                                          BB306860
02FF 0  C01F  RT307 LD     CN301+1   CLEAR 8IT 1K FROM       BB306870
0300 00 94000280        S    L CN101   CCKMANO WORD          BB306880
0302 0  001C          STO    CN301+1                         BB306890
0303 0  C016          LD     CN302     SET BIT 13 IN IOCC    BB306900
0304 0  0019          STO    CN301     AOORESS WORO          BB306910
0305 0  70CA          MOX    RT301     GO ISSUE NEXT INTRPT  BB306920
                  *                                          BB306930
                  *        RETURN FROM TRAP ROUTINES         BB306940
                  *                                          BB306950
0306 0  C012  RT308 LD     CN300     GET PASS SWITCH         BB306960
0307 0  4820          BSC    Z         SKIP IF 2NO PASS      BB306970
0308 0  7C06          MOX    RT309                           BB306980
0309 00 C40006CA        LD   L CNMOO                         BB306990
030B 0  4820          BSC    Z                               BB307000
030C 0  7008          MOX    RT310     WRONG LEVEL SERVICED  BB307010
0300 00 4C4002D0        BOSC L RT305   OK  GO ON             BB307020
                  *                                          BB307030
        ***************************************              BB307040
030F 00 440004F5 RT309 BSI  L ERROR   REQ INTRPO WHILE   SRC BB307050
0311 0  0A2E          OC     INM13     MASKEO                BB307060
        ***************************************              BB307070
                  *                                          BB307080
0312 0  0800          XIO    MASKO                           BB307090
0313 0  080E          XIO    MASK1                           BB307100
0314 0  70CB          MOX    RT305                           BB307110
                  *                                          BB307120
        ***************************************              BB307130
0315 00 440004F5 RT310 BS1  L ERROR   WRONG LEVEL SERVICED  BB307140
0317 0  0983          OC     INM04                           BB307150
        ***************************************              BB307160
                  *                                          BB307170
031B 0  70C4          MOX    RT305                           BB307180
                  *                                          BB307190
                  *        ROUTINE FOUR CONSTANTS            BB307200
                  *                                          BB307210
0319 0  0000  CN300 OC     0         1ST PASS SWITCH         BB307220
031A 0  0004  CN302 OC     /0004                             BB307230
031B 0  0004  CN303 DC     4                                 BB307240
                  *                                          BB307250
031C 00 00000J00       OEC   0                               BB307260
031E 0  0000  CN301 OC     0                                 BB307270
031F 0  0000        DC     0         INTERRUPT IOCC          BB307280
                  *                                          BB307290
0320 0  FFFF  MASKO OC     /FFFF     MASK UPPER IOCC         BB307300
0321 0  0480        DC     /0480                             BB307310
0322 0  FFFF  MASK1 DC     /FFFF     MASK LOHER IOCC         BB307320
0323 0  0481        DC     /0481                             BB307330
                  *                                          BB307340
0324 0  0000  UMSKO OC     /0000     UNMASK UPPER IOCC       BB307350
0325 0  0480        DC     /0480                             BB307360
0326 0  0000  UMSK1 DC     /0000     UNMASK LOWER IOCC       BB307370
0327 0  0481        DC     /0481                             BB307380
                  *                                          BB307390
                  *                                          BB307400
        ****************************************             BB307410
                  *        ROUTINE NUMBER FIVE               BB307420
        ****************************************             BB307430
                  *                                          BB307440
032B 00 C4000199 INT04 LD   L RUNSW   CK.IF RUN NO STOPS     BB307450
032A 00 4C20040E        BSC  L RT414,Z BRNCH IF RUN NO STOP  BB307460
                  *                                          BB307470
032C 00 C4000934        LD   L INLVT+6  GET HEX 5            BB3074B0
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INTERRUPT FUNCTION TEST

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032E 00 04000975        STO  L INM03+7  SET IN ERROR MESSAGE  BB307490
0330 00 0400098A        STO  L INM04+7                        BB307500
0332 00 040009A1        STO  L INM05+7                        BB307510
0334 00 04000A5F        STO  L INM15+7                        BB307520
0336 0J 0400098B        STO  L INM06+7                        BB307530
                  *                                           BB307540
033B 00 44004AA         BSI  L LVLST    GO SET UP INT.AOORSS  BB307550
                  *                                           BB307560
033A 00 66000438        LOX  L2 RT401   SET TRAP RTNS RETURN  BB307570
033C 00 6700034A        LOX  L3 RT400   SET LOOP ON ERROR     BB307580
033E 0G 6F000521        STX  L3 LPERR+1 RETURN                BB307590
0340 00 67000350        LOX  L3 RT402   SET COMN RTN RETURN   BB307600
0342 00 C400092E        LO   L INLVT    SET REQUEST NO IN     BB307610
0344 00 04000979        STO  L INM03+11 *ERROR MESSAGES       BB307620
0346 00 040009BE        STO  L INM04+11                       BB307630
                  *                                           BB307640
0348 0  2C41           OC    /2C41     WRITE STORAGE PROTCT   BB307650
0349 0  0429           OC    CN401                            BB307660
                  *                                           BB307670
034A 00 04000429 RT400 STO L CN401     VIOLATE PROT.STORAGE   BB307680
                  *                                           BB307690
        **********************************************        BB307700
034C 00 440004F5        BSI  L ERROR   REQUEST FAILEO TO  SRC BB30771C
034E 0  096E           DC    INM03     INTERRUPT              BB307720
        **********************************************        BB307730
                  *                                           BB307740
034F 0  700C          MOX    RT413                            BB307750
                  *                                           BB307760
0350 00 C40006D6 RT402 LO  L ILSAV    CHECK IF PROPER ILSW    BB307770
0352 00 F4000A2A        EOR  L CN402   *BIT FOR SPV           BB307780
0354 0  4818          BSC    *-        SKIP ON WRONG BIT      BB307790
0355 0  7006          MOX    RT413     BRANCH IF ILSW OK      BB307800
                  *                                           BB307810
        **********************************************        BB307820
0356 00 44000523        BSI  L LOG    WRONG ILSW BIT          BB307830
0358 0  0984           OC    INM06                            BB307840
        **********************************************        BB307850
                  *                                           BB307860
0359 00 C4000606        LO  L ILSAV    ILSW TO  A             BB307870
                  *                                           BB307880
035B 0  3006          WT6    WAIT  6    ILSW ERROR            BB307890
                  *                                           BB3C7900
035C 00 C4000948 RT413 LO  L INLVT+26 SET CE REQ IN ERROR     BB307910
035E 00 0400098E        STO  L INM04+11 MESSAGES              BB307920
0360 0U 04000979        STO  L INM03+11                       BB307930
0362 00 6700036C        LOX  L3 RT404   SET LOOP ERROR        BB307940
0364 00 6F000521        STX  L3 LPERR+1 RETURN                BB307950
                  *                                           BB307960
0366 00 67000374        LOX  L3 RT403   SET COMN RTN RETURN   BB307970
0368 00 C400042C        LO   L CN404    CE INTERRUPT BRANCH   BB307980
036A 00 04000002        STO  L /0002    *TO AOORESS           BB308000
                  *                                           BB308010
        **********************************************        BB308020
036C 00 44000523 RT404 BSI L LOG      PUSH CE INTERRUPT   SRC BB308020
036E 0  0907           OC    INM0B     BUTTON                 BB308030
        **********************************************        BB308040
                  *                                           BB308050
036F 00 440005F3        BSI  L OELAY   GO WAIT FOR INTRPT     BB308060
                  *                                           BB308070
        **********************************************        BB308080
0371 00 440004F5        BSI  L ERROR   LOG CE REQ FAILEO  SRC BB308090
0373 0  096E           DC    INM03                            BB308100
        **********************************************        BB308110
                  *                                           BB308120
0374 00 C4000947 RT403 LO  L INLVT+25 SET TRACE REQUEST       BB308130
0376 00 0400098E        STO  L INM04+11 IN ERROR MESSAGES     BB308140
0378 00 04000979        STO  L INM03+11                       BB308150
                  *                                           BB308160
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037A 00 67000382        LDX  L3 RT412    SET LOOP ERROR RETRN    8B308170
037C 00 6F00052I        STX  L3 LPERR+1                          8B308180
                    *                                            8B308190
037E 00 6700038A        LDX  L3 RT405    SET COMN RTN RETURN     8B308200
0380 GO 74010428        MDX  L  CN400,1  SET TRACE INOICATOR     8B308210
                    *                                            8B308220
                    *******************************************  8B308230
0382 00 44000523 RT412 BSI  L  LOG       LOG SET TRACE           8B308240
0384 0  09F8            OC    INM10                              8B308250
                    *                                            8B308260
                    *******************************************  8B308270
0385 0  3007     WT7   WAIT  7           SET TRACE MODE          8B308280
                    *                                            8B308290
0386 0  1000           NOP               INT AFTER THIS INSTR    8B308300
                    *                                            8B308310
                    *******************************************  8B308320
0387 00 440004F5       BSI  L  ERROR     TRACE FAILED TO    SRC  8B308330
0389 0  096E           OC    INM03       *INTERRUPT             8B308340
                    *******************************************  8B308350
                    *                                            8B308360
                    *******************************************  8B308370
03BA 00 44000523 RT405 BSI  L  LOG       LOG SET RUN        SRC  8B308380
03BC 0  0A08           OC    INM11                              8B308390
                    *******************************************  8B308400
                    *                                            8B308410
0380 0  300B     WT8   WAIT  8           SET RUN MODE           8B308420
                    *                                            8B308430
038E 00 44000609       BSI  L  SVINT     RESET TRACE INTRPT     8B308440
0390 0  1010           SLA   I6          CLEAR TRACE INDICATR   8B308450
0391 00 04000428       STO  L  CN400                            8B308460
0393 00 6600038E       LOX  L2 WT8+1     SETUP LOOP ON ERRCR    8B308470
0395 00 6E000521       STX  L2 LPERR+1   *RETURN                8B308480
0397 00 660003A4       LDX  L2 RT406     SET TRAP RTNS RETURN   8B308490
                    *                                            8B308500
                    *******************************************  8B308510
0399 00 44000523       BSI  L  LOG       LOG PUSH CONSOLE   SRC  8B308520
039B 0  09E7           OC    INM09       INTERRUPT BUTTON       8B308530
                    *******************************************  8B308540
                    *                                            8B308550
039C 00 440005F3       BSI  L  OELAY     GO WAIT FOR INTRPT.    8B308560
                    *                                            8B308570
039E 00 0C000436       XIO  L  CNSNS     RESET CONSOLE CNTRLS   8B308580
                    *                                            8B308590
                    *******************************************  8B308600
03A0 00 440004F5       BSI  L  ERROR     LOG CONSOLE BUTTON SRC  8B308610
03A2 0  0B22           OC    INM20       FAILEO                 8B308620
                    *******************************************  8B308630
                    *                                            8B308640
03A3 0  7020           MDX      RT4I5     BYPASS CONSOLE MESAG  8B308650
                    *                                            8B308660
03A4 00 44000609 RT406 BSI  L  SVINT     RESET CONSOLE CNTRL    8B308670
03A6 00 C480068B       LO   I  CMTRP     GET INTERRUPTING LVL   8B308680
03A8 00 04000B44       STO  L  INM21+17  SET IN MESSAGE         8B308690
03AA 00 C4000606       LD   L  ILSAV     SET ILSW BIT IN MSSG   8B308700
03AC 0  4820           BSC   Z           SKIP IF NO BIT ON      8B308710
03AO 0  7005           MDX      *+5                             8B308720
03AE 00 67000025       LDX  L3 /0025     NO ILSW SET MESSAGE    8B308730
03BO 00 6F000B4A       STX  L3 INM21+23  *FOR BIT N             8B308740
03B2 0  700E           MOX      *+14                            8B308750
03B3 0  630F           LDX   3 15        OETERMINE WHICH ILSW   8B308760
03B4 0  1340           SLCA  3           *BIT IS ON             8B308770
03B5 0  6B7C           STX   3 HOLO                             8B308780
03B6 0  C07B           LD    HOLD        COMPLEMENT BITS 12     8B308790
03B7 0  F07B           EOR   COMP        *THROUGH 15            8B308800
03B8 0  D079           STO   HOLD                               8B308810
03B9 00 67800432       LOX  I3 HOLD      GET COOED EQUIVELANT   8B308820
03BB 00 C700092F       LO   L3 INLVT+1   *OF ILSW BIT AND SET   8B308830
03BD 00 E4000431       AND  L  CN409     *IN MESSAGE            8B308840
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03BF 00 04000B4A       STO  L  INM2I+23                         8B308850
                    *******************************************  8B308860
03C1 00 44000523       BSI  L  LOG       LOG CONSOLE BUTTON SRC  8B308870
03C3 0  0B33           OC    INM21       INTRPT LEVFL           8B308880
                    *******************************************  8B308890
                    *           TRACE AND CE PRIORITY CK        8B308900
                    *                                            8B308910
03C4 00 44000488 RT415 BSI  L  PRIST     GO SET XFER VECTORS SRC 8B308920
                    *                                            8B308930
03C6 00 67800198       LDX  I3 LVSAV     IX 3 = NO.LVLS.+ 3     8B308940
03C8 0  7303           MOX   3 3                                8B308950
                    *                                            8B308960
03C9 0  6I00           LOX   1 0                                8B308970
03CA 0  62C0           LOX   2 0         PRINT INOEX            8B308980
                    *                                            8B308990
                    *******************************************  8B309000
03CB 00 44000523       BSI  L  LOG       LOG SET TRACE MODE SRC  8B309010
03CO 0  09FB           OC    INMIO                              8B309020
                    *******************************************  8B309030
03CE 0  3009     WT9   WAIT  9           SET TRACE MODE         8B309040
03CF 0  1000           NOP               INT AFTER THIS INSTR   8B309050
                    *                                            8B309060
                    *       RETURN FROM TRAP ROUTINES           8B309070
                    *                                            8B309080
03D0 00 440004E2 RT407 BSI  L  PRIPT     GO LOG PRIORITY SEQ SRC 8B309090
                    *                                            8B309100
                    *******************************************  8B309110
0302 00 44000523       BSI  L  LOG       LOG SET RUN MODE   SRC  8B309120
0304 0  0A0B           OC    INM11                              8B309130
                    *******************************************  8B309140
                    *                                            8B309150
                    *                                            8B309160
03D5 G  300A     WTA   WAIT  10          SET RUN MODE           8B309170
                    *                                            8B309180
03D6 00 44000609       BSI  L  SVINT     RESET TRACE INTRPT     8B309190
                    *                                            8B309200
03DB 00 440004B8       BSI  L  PRIST     GO SET TRAP AOORS      8B309210
030A 0  C052           LD    CN405       CE INTERRUPT BRANCH    8B309220
030B 00 D4000002       STO  L  /0002     *TO AODRESS            8B309230
                    *                                            8B309240
030D 00 67800198       LOX  I3 LVSAV     IX 3 = NO.LEVELS +3    8B309250
03DF 0  7303           MDX   3 3                                8B309260
03E0 0  6100           LOX   1 0                                8B309270
03E1 0  6200           LOX   2 0         PRINT INDEX            8B309280
                    *******************************************  8B309290
                    *                                            8B309300
03E2 00 44000523 RT409 BSI  L  LOG       LOG PUSH CE BUTTON SRC  8B309310
03E4 0  0907           OC    INM08                              8B309320
                    *******************************************  8B309330
                    *                                            8B309340
03E5 0  300B     WTB   WAIT  11          PUSH CE INTRP BUTTON   8B309350
                    *                                            8B309360
                    *       RETURN FROM TRAP ROUTINES           8B309370
                    *                                            8B309380
03E6 00 440004E2 RT408 BSI  L  PRIPT     GO LOG PRIORITY SEQ SRC 8B309390
                    *                                            8B309400
                    *           CHECK CE AND CONSOLE BUTNS      8B309410
                    *           AND TRACE MODE WITH OISABL      8B309420
                    *           SWITCH ON                       8B309430
03E8 00 440004AA       BSI  L  LVLST     GO SET UP TRAP AORSS   8B309440
                    *                                            8B309450
03EA 0  C041           LO    CN404       SET CE INTERRUPT       8B309460
03EB 00 04000002       STO  L  /0002     *BRANCH AODRESS        8B309470
03EO 00 66000417       LDX  L2 RT410     SET TRAP RTNS RETUR    8B309480
                    *                                            8B309490
03EF 00 67000420       LOX  L3 RT411     SET LOOP ERR RETURN    8B309500
03F1 00 6F000521       STX  L3 LPERR+1                          8B309510
                                                                8B309520
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                ****************************************         88309530
                                                                88309540
03F3 00 44000523    BSI  L  LOG      LOG SET DISABLE    SRC     88309550
03F5 0  084C        DC      INM22    CHECK BUTTONS              88309560
                ****************************************         88309570
                •                                               88309580
03F6 0  300C    WTC  WAIT  12        SET DISABLE CK BTTNS       88309590
                •                                               88309600
03F7 00 4C0003F9    BOSC L  •        RESET IF TRACE ERROR       88309610
03F9 00 440004A0    BSI  L  NEST1    SET NST ADDRESSES          88309620
                •                                               88309630
03FB 0  C032        LD      CN406    SET CE INTERRUPT           88309640
03FC 00 04000002    STD  L  /0002    *BRANCH ADDRESS            88309650
03FE 0  C030        LD      CN407    SET CE INTERRUPT           88309660
03FF 00 04000003    STD  L  /0003    *RETURN ADDRESS            88309670
0401 0  C02E        LD      CN408                               88309680
0402 0C D4000004    STD  L  /0004                               88309690
0404 0  2C40        DC      /2C40    CLEAR STORAGE PROTCT        88309700
0405 0  0429        DC      CN401                               88309710
                •                                               88309720
                ****************************************         88309730
0406 00 44000523    BSI  L  LOG                         SRC     88309740
0408 0  0A0B        DC      INM11                               88309750
                ****************************************         98309760
                •                                               68309770
0409 0  3000    WTD  WAIT  13        SET RUN MODE               88309780
                •                                               88309790
                ****************************************         88309800
040A 00 44000523    BSI  L  LOG      TURN DISABLE SW OFF        88309810
040C 0  095E        DC      INM02                               88309820
                ****************************************         88309830
                •                                               88309840
040D 0  300E    WTE  WAIT  14        TURN DISABLE SW OFF        88309850
                •                                               88309860
040E 00 C400018F RT414 LD L RTNND    PREPARE SEQUENCE CK        88309870
0410 0  F01A        EOR     CN403                               88309880
0411 00 04000191    STD  L  SEQCK                               88309890
                •                                               8830990C
0413 00 4400048E    BSI  L  INTST    SET SPURIOUS INT ADR       88309910
                •                                               88309920
0415 00 4C000177    BSC  L  RTNRT                               88309930
                •                                               88309940
                •       RETURN IF INTERRUPT                     88309950
                •                                               88309960
0417 00 0C000436 RT41D XID L CNSNS   CONSOLE CNTRL RESET        88309970
0419 00 C480068B    LD   I  CMTRP                               88309980
041B 00 040009A5    STD  L  INM05+11                            88309990
                •                                               88310000
                ****************************************         88310010
041D 00 440004F9    BSI  L  ERALT    LOG DISABLED INTRPT SRC    88310020
041F 0  099A        DC      INM05                               88310030
                ****************************************         88310040
                •                                               88310050
0420 00 C40009A5 RT411 LD L INM05+11 PICK UP FAILING LVL        88310060
0422 00 F40006FE    EOR  L  REQTR    CHECK IF LEVEL TRACE       88310070
0424 00 4C1803F6    BSC  L  WTC,+-   NONRESET BR IF TRACE       88310080
0426 00 4C4003F6    BOSC L  WTC      RESET BRANCH               88310090
                •                                               88310100
                •       ROUTINE FIVE CONSTANTS                  88310110
                •                                               88310120
0428 0  0000    CN400 OC  0          TRACE INDICATOR            88310130
0429 0  0000    CN401 OC  0                                     88310140
042A 0  2000    CN402 OC  /2000      SPV ILSW CK WORD           88310150
042B 0  0005    CN403 DC  5                                     88310160
042C 0  0640    CN404 DC  LVL27                                 88310170
042D C  0702    CN405 DC  PRI27                                 88310180
042E 0  0607    CN406 DC  SERVC      *CE INTERRUPT              88310190
042F 0  4C80    CN407 DC  /4C80      *SERVICE CONSTANTS         88310200
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0430 0 000A    CN408 OC  /000A      *                          88310210
0431 0 01FF    CN409 OC  /01FF                                  88310220
0432 0 0000    HOLD  OC  0          TEMP STORAGE               88310230
0433 0 000F    COMP  OC  /000F      COMPLEMENT CONSTANT         88310240
                •                                               88310250
0434 00 00000000   OEC  0                                      88310260
0436 0 0000    CNSNS OC  /0000      SENSE AREA 0                88310270
0437 0 07C1        OC      /07C1    IOCC                        88310280
                •                                               88310290
                •           RTN 4 COMMON INTRPT RTN            88310300
                •                                               88310310
0438 0 C0EF    RT401 LD    CN400    GET TRACE INDICATOR         88310320
0439 0 4820        BSC     Z        SKIP IF OFF                88310330
043A 0 7002        MDX     *+2                                 88310340
043B 00 44000609    BSI  L  SVINT   RESET INTRPT CONTROL        88310350
043D 00 C40006CA    LD   L  CMM00   GET SERVICED COMPARE        88310360
043F 00 4F180000    BSC  L3 0,+-    RETURN TO USER IF OK        88310370
                •                                               88310380
                ****************************************         88310390
0441 00 440004F5    BSI  L  ERROR   WRONG LEVEL SERVICED SRC    88310400
0443 0 0983        OC      INM04                               88310410
                ****************************************         88310420
                •                                               88310430
0444 0 1010        SLA     16                                  88310440
0445 0 70F9        MDX     RT401+7                             88310450
                •                                               88310460
                ****************************************         88310470
                •        ROUTINE NUMBER SIX                     88310480
                ****************************************         88310490
                •                                               88310500
0446 00 C4000199 INT05 LD L RUNSW   CK IF RUN NO STOPS          88310510
0448 00 4C200481    BSC  L  RT504,Z RUN BYPASS ROUTINE 5        88310520
044A 00 670008F6    LDX  L3 TRACE                               88310530
044C 00 6F000009    STX  L3 /0009   SET TRACE TRAP ADDRS        88310540
                •                                               88310550
044E 00 67000930    LDX  L3 INLVT+2                             88310560
0450 0 6827        STX     3 TRAER+1 HEX PASS NO.               88310570
                •                                               88310580
0451 00 6700047F    LDX  L3 RT502                               88310590
0453 00 6F000521    STX  L3 LPERR+1 SET LOOP ON ERROR           88310600
                •                                               88310610
0455 0 630A        LDX     3 10     PASS CONTROL               88310620
                •                                               88310630
0456 0 1010        SLA     16                                  88310640
0457 0 0035        STO     TRIND    CLEAR TRACED INDICTR        88310650
                •                                               88310660
0458 0 6200        LDX     2 0      EXPECTED INSTRN.INDX       88310670
                •                                               88310680
                ****************************************         88310690
0459 00 44000523    BSI  L  LOG     LOG SET TRACE       SRC     88310700
045B 0 09F8        OC      INM10                               88310710
                ****************************************         88310720
                •                                               88310730
045C 0 300F    WTF  WAIT  15        SET TRACE MODE             88310740
                •                                               88310750
                •           THE 1ST 10 INSTRUCTION              88310760
                •           ARE CHECKED FOR PROPER              88310770
                •           SEQUENCE OF INTERRUPTS              88310780
                •                                               88310790
                •                                               88310800
045D 0 C02C    RT500 LD    CN500                               88310810
045E 0 180F        RTE     31                                  88310820
045F 0 002B        STD     CN501                               88310830
0460 0 9029        S       CN500                               88310840
0461 0 F029        EOR     CN501                               88310850
0462 0 A028        M       CN501                               88310860
0463 0 8026        A       CN500                               88310870
0464 0 4820        BSC     Z                                   88310880
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0465 0  1000              NOP                                        8B310890
0466 0  7000              MDX     RT501                              8B310900
                     *                                               8B310910
0467 0  C025     RT501 LD         TRIND     GET TRACED INDICATOR     8B310920
0468 00 4C180477          BSC   L TRAER,+-  BRANCH NO INSTR TRCD     8B310930
046A 00 74010478          MDX   L TRAER+1,1                         8B310940
046C 0  6200              LDX     2 0                                8B310950
046D 0  1010              SLA     16                                 8B310960
046E 0  D01E              STO     TRIND     CLEAR TRACED INDICTR     8B310970
                     *                                               8B310980
046F 0  73FF              MDX     3 -1      CHECK IF 10 PASSES       8B310990
0470 0  700E              MDX     RT502     NO                       8B311000
                     *                                               8B311010
          ***************************************************        8B311020
0471 00 44000523          BSI   L LOG       LOG SET RUN MODE    SRC  8B311030
0473 0  0A0B              DC      INM11                              8B311040
          ***************************************************        8B311050
                     *                                               8B311060
0474 0  3010     WT10 WAIT     16           SET RUN MODE             8B311070
                                                                     8B311080
0475 00 4C400481          BOSC  L RT504     RESET BRANCH             8B311090
                     *                                               8B311100
0477 00 C4000000  TRAER LD   L 0            SET PASS NUMBER IN       8B311110
0479 00 D4000B03          STO   L INM18+23  *ERROR MESSAGE           8B311120
                     *                                               8B311130
          ***************************************************        8B311140
047B 00 440004F5          BSI   L ERROR     LOG TRACE DIO NOT   SRC  8B311150
047D 0  0AEC              DC      INM18      INTERRUPT                8B311160
          ***************************************************        8B311170
                     *                                               8B311180
047E 0  70EB              MDX     RT501+3                            8B311190
                     *                                               8B311200
047F 00 4C40045D  RT502 BOSC  L RT500       MAKE ANOTHER PASS        8B311210
                     *                                               8B311220
0481 00 C400018F  RT504 LD   L RTNND        PREPARE SEQUENCE CK      8B311230
0483 00 F008              EOR     CN502                              8B311240
0484 00 D4000191          STO   L SEQCK                              8B311250
                     *                                               8B311260
0486 00 4400048E          BSI   L INTST     SET SPURIOUS INT ADR     8B311270
                     *                                               8B311280
0488 00 4C000177          BSC   L RTNRT                              8B311290
                     *                                               8B311300
                     *              ROUTINE SIX CONSTANTS            8B311310
                     *                                               8B311320
048A 0  0001     CN500 DC      1                                    8B311330
048B 0  0000     CN501 DC      0                                    8B311340
048C 0  C006     CN502 DC      6                                    8B311350
048D 0  0000     TRIND DC      0                                    8B311360
                     *                                               8B311370
                     *              ROUTINE TO LOAD SPURIOUS         8B311380
                     *              INTERRUPT TRAP ADDRESSES         8B311390
                     *                                               8B311400
048E 0  0000     INTST DC      0                               SE   8B311410
048F 00 0C000320          XIO   L MASK0     MASK INTERRUPTS          8B311420
0491 00 0C000322          XIO   L MASK1                              8B311430
0493 0  631B              LDX     3 27                               8B311440
0494 0  C00A              LD      INCN      ADDRESS SVINT            8B311450
0495 00 D7000007          STO   L3 /0007   SET ADDRESS SVINT        8B311460
0497 0  73FF              MDX     3 -1      *INTO ALL INTERRUPT      8B311470
0498 0  70FC              MDX     *-4       *LOCATIONS               8B311480
0499 00 0C000324          XIO   L UMSK0     UNMASK INTERRUPTS        8B311490
049B 00 0C000326          XIO   L UMSK1                              8B311500
049D 00 4C80048E          BSC   I INTST     RETURN TO USER      SX   8B311510
                     *                                               8B311520
049F 0  0609     INCN  DC      SVINT        TRAP ROUTINE ADDRES     8B311530
                     *                                               8B311540
                     *              SET TRAP ADDRESSES TO            8B311550
                     *                                               8B311560
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                     *              SERVICE NESTED INTERRUPTS        8B311570
                     *              WHILE DISABLED                   8B311580
                     *                                               8B311590
04A0 0  0000     NEST1 DC      0                                    8B311600
04A1 0  621B              LDX     2 27      SET INDEX                8B311610
04A2 0  C006              LD      NSTCN     ADDRESS SERVC            8B311620
04A3 00 06000007          STO   L2 7       SET ADDRS IN XFER LC     8B311630
04A5 0  72FF              MDX     2 -1      SKIP IF DONE             8B311640
04A6 0  70FC              MDX     *-4       BR TO DO NEXT VECTOR     8B311650
04A7 00 4C8004A0          BSC   I NEST1     EXIT SUBROUTINE     SX   8B311660
                     *                                               8B311670
04A9 0  06D7     NSTCN DC      SERVC                                8B311680
                     *                                               8B311690
                     *                                               8B311700
                     *              TRAP ADDRESS SETUP               8B311710
                     *                                               8B311720
04AA 0  0000     LVLST DC      0                               SE   8B311730
04AB 0  6300              LDX     3 0                                8B311740
04AC 0  621B              LDX     2 27                               8B311750
04AD 0  C008              LD      LVLS1     = LVL01                  8B311760
04AE 00 D7000008  LVST1 STO   L3 /0008                             8B311770
04B0 0  8006              A       LVLS2     ADD 3 FOR NEXT ADDRS     8B311780
04B1 0  7301              MDX     3 1                                8B311790
04B2 0  72FF              MDX     2 -1                               8B311800
04B3 0  70FA              MDX     LVST1                              8B311810
04B4 00 4C8004AA          BSC   I LVLST     RETURN              SX   8B311820
                     *                                               8B311830
04B6 0  063A     LVLS1 DC      LVL01        1ST TRAP RTN.ADDRESS    8B311840
04B7 0  0003     LVLS2 DC      3                                    8B311850
                     *                                               8B311860
                     *              PRIORITY TRAP ADDRESS AND        8B311870
                     *              PRINT TABLE SETUP                8B311880
                     *                                               8B311890
04B8 0  0000     PRIST DC      0                               SE   8B311900
04B9 0  6300              LDX     3 0       SET INDEX                8B311910
04BA 0  621A              LDX     2 26      SET INDEX                8B311920
04BB 0  C020              LD      CNSTO     PICKUP STARTING ADRS     8B311930
04BC 00 07000009  SETO1 STO   L3 9         SET IN XFER VECTOR       8B311940
04BE 0  7301              MDX     3 1       ADD 1 TO STORE IX        8B311950
04BF 0  8010              A       CNST1     ADD 20 FOR NEXT ADRS     8B311960
04C0 0  72FF              MDX     2 -1      SKIP WHEN DONE           8B311970
04C1 0  70FA              MDX     SETO1     GO LOAD NEXT VECTOR      8B311980
04C2 00 670006E0          LDX   L3 PRIO1    LOAD INTERNAL INTRPT     8B311990
04C4 00 6F000008          STX   L3 8        *XFER VECTOR             8B312000
                     *                                               8B312010
                     *              SET UP PRIORITY SEQUENCE         8B312020
                     *              PRINT TABLE                      8B312030
                     *                                               8B312040
                     *                                               8B312050
04C6 0  6334              LDX     3 52                               8B312060
04C7 0  C818              LDD     CNST2                              8B312070
04C8 00 0F000A76  SETO2 STD   L3 IN16V-2   REQUEST SEQUENCE MSG     8B312080
04CA 00 0F000AB6          STD   L3 IN17V-2   SERVICO SEQUENCE MSG    8B312090
04CC 0  73FE              MDX     3 -2                               8B312100
04CD 0  70FA              MDX     SETO2                              8B312110
04CE 00 D4000AAB          STO   L IN16V+51  SET TERMINATOR AT       8B312120
04D0 00 D4000AEB          STO   L IN17V+51  END OF MESSAGE TABLE    8B312130
                     *                                               8B312140
                     *              SET IOCC FOR LOWEST LEVEL        8B312150
                     *                                               8B312160
04D2 00 6580018E          LDX   I1 LVLIX                            8B312170
04D4 00 CD00028C          LDD   L1 XIOCC    GET COMMAND FROM TBL     8B312180
04D6 00 DC000700          STD   L PR262     SET IN TR AND CE         8B312190
04D8 00 DC000714          STD   L PR272     TRAP ROUTINES            8B312200
04DA 00 4C8004B8          BSC   I PRIST     EXIT               SX    8B312210
                     *                                               8B312220
                     *              SETUP CONSTANTS                  8B312230
                     *                                               8B312240
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INTERRUPT FUNCTION TEST

```
040C 0 06EE    CNSTO OC   PRI26   LOWEST LEVEL AODRESS        BB312250
040D 0 0014    CNST1 OC   20                                  BB312260
*                                                             BB312270
040E 00 00000000    OEC   0                                   BB312280
04E0 0 FFFF    CNST2 OC   /FFFF   TERMINATOR                  BB312290
04E1 0 0000          OC   /0000   8LANK                       BB312300
*                                                             BB312310
*                                                             BB312320
*              PRIORITY SEQUENCE LOG                          BB312330
*                                                             BB312340
04E2 0 0000    PRIPT OC   0                              SE   BB312350
*                                                             BB312360
04E3 00 0C00018A    XIO L BSWO   CHECK IF BYPASS              BB312370
04E5 00 C4000192    LO  L BSWOO  *PRIORITY PRINTOUT           BB312380
04E7 0 1007         SLA   7                                   BB312390
04EB 0 4828         8SC   +Z                                  BB312400
04E9 0 7009         MOX   PRIXT                               BB312410
*                                                             BB312420
*              LOG PRIORITY HEAOING                           BB312430
***************************************                       BB312440
04EA 00 44000523    8SI L LOG                            SRC  BB312450
04EC 0 0A58         OC    INM15                               BB312460
*                                                             BB312470
*              OUTPUT REQUEST SEQUENCE                        BB312480
*                                                             BB312490
***************************************                       BB312500
04E0 00 44000523    BSI L LOG                            SRC  BB312510
04EF 0 0A6C         OC    INM16                               BB312520
*                                                             BB312530
*              OUTPUT SERVICED SEQUENCE                       BB312540
*                                                             BB312550
***************************************                       BB312560
04F0 00 44000523    8SI L LOG                            SRC  BB312570
04F2 0 0AAC         OC    INM17                               BB312580
*                                                             BB312590
*                                                             BB312600
04F3 00 4C8004E2 PRIXT 8SC I PRIPT    EXIT                    BB312610
***************************************                       BB312620
*              ERROR   ROUTINE                                BB312630
***************************************                       BB312640
*                                                             BB312650
04F5 0 0000    ERROR OC   0                              SE   BB312660
04F6 00 44000609    8SI L SVINT  RESET POSSI8LE OSW      SRC  BB312670
04F8 0 7003         MOX   ERALT+3  SKIP ALTERNATE ENTRY       BB31268O
04F9 0 0000    ERALT DC   0     ALTERNATE TRACE ENTR          BB312690
04FA 0 C0FE         LD    ERALT  STORE ALTERNATE ENTR         BB312700
04FB 0 00F9         STO   ERROR  *I CTR IN NORMAL ENT         BB312710
04FC 00 C48004F5    LO  I ERROR  SET MESSAGE AODRESS          BB312720
04FE 0 000A         STO   ERRO1+1  IN LOG CALL                BB312730
*                                                             BB312740
04FF 00 74010522    MOX L ERRIO,1  SET ERR CALL INOCTOR       BB312750
*                                                             BB312760
0501 00 0C00018A    XIO L BSWO   CHECK IF 8YPASS              BB312770
0503 00 C4000192    LO  L 8SWOO  *ERROR PRINT REQSTD          BB31278O
0505 0 1802         SRA   2                                   BB312790
0506 0 4804         8SC   E                                   BB312800
0507 0 7002         MOX   ERRO2                               BB312810
*                                                             BB312820
***************************************                       BB312830
0508 0 401A    ERRO1 BSI   LOG   GO PRINT ERROR         SRC   BB312840
0509 0 0000         OC    0                                   BB312850
***************************************                       BB312860
*                                                             BB312870
050A 0 1010    ERRO2 SLA   16   CLEAR ERROR CALL              BB312880
050B 0 0016         STO   ERRID  INOICATOR                    BB312890
*                                                             BB312900
050C 00 0C00018A    XIO L BSWO   CHECK IF HALT ON             BB312910
050E 00 C4000192    LD  L BSWOO  *ERROR REQUESTEO             BB312920
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INTERRUPT FUNCTION TEST

```
0510 0 1B01         SRA   1                                   BB312930
0511 0 4804         BSC   E                                   BB312940
0512 0 700B         MOX   WT11   HALT ON ERROR BRANCH         BB312950
*                                                             BB312960
0513 00 0C00018A ERRO3 XIO L BSWO   HECK IF LOOP ON           BB312970
0515 00 C4000192    LO  L 8SWOO  *ERROR REQUESTEO             BB312980
0517 0 1B03         SRA   3                                   BB312990
0518 0 4804         BSC   E                                   BB313000
0519 0 7006         MOX   LPERR  LOOP ERROR                   BB313010
*                                                             BB313020
051A 00 740104F5    MOX L ERROR,1  ADO 1 TO RETURN            BB313030
051C 00 4C8004F5    BSC I ERROR   RETURN TO USER         SX   BB313040
*                                                             BB313050
*              ERROR HALT RECUESTED                           BB313060
*                                                             BB313070
051E 0 3011    WT11 WAIT   17    HALT ON ERROR REQ.           BB313080
051F 0 70F3         MOX   ERRO3                               BB313090
*                                                             BB313100
*              LOOP ERROR REQUESTEO                           BB313110
*                                                             BB313120
0520 00 4C000000 LPERR BSC L 0                                BB313130
*                                                             BB313140
0522 0 0000    ERRIO OC   0     ERROR CALL INDICATOR          BB313150
***************************************                       BB313160
*              LOG ROUTINE               *                    BB313170
***************************************                       BB313180
*                                                             BB313190
0523 0 0000    LOG   OC   0                              SE   BB313200
*                                                             BB313210
0524 0 6B10    LOGO1 STX 3 LOGO6+1  SAVE IX 3                 BB313220
0525 00 0C000320    XIO L MASKO  MASK INTERRUPTS              BB313230
0527 00 0C000322    XIO L MASK1                               BB313240
*                                                             BB313250
0529 00 C400019A    LO  L OPIND  CK OUTPUT OEVICE             BB313260
052B 00 4C180548    BSC L TWRTR,+-  BRANCH IF TYPEWRITER      BB313270
*                                                             BB313280
052D 00 C4B00523    LD  I LOG    GET MESSAGE AODRESS          BB313290
052F 0 005B         STO   PRWRT  SET IN IOCC                  BB313300
*                                                             BB313310
0530 0 0853    LOGO2 XIO   PPSNS  CHECK PRINTER READY         BB313320
0531 00 4C040537    8SC L WT12,E  BRANCH IF NOT REAOY         BB313330
0533 0 1801         SRA   1                                   BB313340
0534 00 4C040539    8SC L WT13,E  BRANCH IF BUSY              BB313350
0536 0 7004         MOX   LOGO5  REAOY ANO NOT 8USY           BB313360
*                                                             BB313370
0537 0 3012    WT12 WAIT   18    1443 NOT REAOY               BB313380
0538 0 70F7         MOX   LOGO2  CHECK AGAIN                  BB313390
*                                                             BB313400
0539 0 3013    WT13 WAIT   19    1443 BUSY                    BB313410
053A 0 70F5         MOX   LOGO2  CHECK AGAIN                  BB313420
*                                                             BB313430
053B 0 084C    LOGO5 XIO   PRWRT  OUTPUT MESSAGE              BB313440
*                                                             BB313450
053C 0 0B49         XIO   PRSN   CHECK FOR OP COMPLT          BB313460
053D 0 1002         SLA   2                                   BB313470
053E 0 4810         8SC   -                                   BB313480
053F 0 70FC         MOX   *-4                                 BB313490
0540 0 0B43         XIO   PRSNS  RESET DSW                    BB313500
*                                                             BB313510
*              PRINTING COMPLETE                              BB313520
*                                                             BB313530
0541 00 67000300 LOGO6 LDX L3 0   RESTORE IX 3               BB313540
0543 00 0C000324    XIO L UMSKO  UNMASK INTERRUPTS            BB313550
0545 00 0C000326    XIO L UMSK1                               BB313560
0547 00 74010523    MOX L LOG,1   BUMP RETURN                BB313570
*                                                             BB313580
0549 00 4C800523    8SC I LOG    RETURN TO USER          SX   BB313590
*                                                             BB313600
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INTERRUPT FUNCTION TEST

```
0548 0  1010      TWRTR SLA   16                              88313610
054C 0  0032            STO   WROSW                           88313620
0540 0  083C            XIO   TWSNS   CHECK IF TYPEWRITER      88313630
054E 0  1005            SLA   5       REAOY                    88313640
054F 0  180F            SRA   15                               88313650
0550 00 4C180554        BSC L TWRO1,+-                         88313660
        *                                                      88313670
0552 0  3014      WT14  WAIT  20      1816/1053 NOT REAOY      88313680
0553 0  70F9            MOX   TWRTR+2                          88313690
        *                                                      88313700
0554 0  C028      TWRO1 LO    TWRTO   CARRAIGE RETURN ANO      88313710
0555 0  002A            STO   IOARA   LINE SPACE TO IO ARA     88313720
        *                                                      88313730
0556 0  0835            XIO   TWWRT   CARG RETURN/LINE SP      88313740
        *                                                      88313750
0557 0  0332            XIO   TWSNS   HANG TILL NOT 8USY       88313760
0558 0  180B            SRA   11                               88313770
0559 0  4804            BSC   E                                88313780
055A 0  70FC            MOX   *-4                              88313790
        *                                                      88313800
0558 0  6301            LOX   3 1     8YPASS 1443 WORD COUNT   88313810
055C 00 C4800523        LO  I LOG     GET MESSAGE AOORESS      88313820
055E 0  0001            STO   TWRO2+1                          88313830
        *                                                      88313840
055F 00 C7000000  TWRO2 LO    L3 0    GET WORD TO PRINT        88313850
0561 00 0400058E        STO L CODWO   SFT IN CONVERSION RT     88313860
0563 0  F01A            EOR   TWRT1   CHECK IF TERMINATOR      88313870
0564 00 4C180541        8SC L LOGO6,+-   BRANCH IF TERMINATOR  88313880
        *                                                      88313890
        ***************************************************    88313900
0566 00 4400058E        8SI L COOCV   GO CONVERT 43 TO TW SRC  88313910
        ***************************************************    88313920
                                                               88313930
0568 00 C40005BE        LO  L CODWO                            88313940
056A 0  0015            STO   IOARA                            88313950
        *                                                      08313960
        *               OUTPUT A CHARACTER                     88313970
        *                                                      88313980
056B 0  0820      XIOWR XIO   TWWRT   WRITE CHARACTER          88313990
        *                                                      88314000
056C 0  0810      XIOSN XIO   TWSNS   HANG ON 8USY             88314010
0560 0  1808            SRA   11                               88314020
056E 0  4804            BSC   E                                88314030
056F 0  70FC            MOX   XIOSN   BUSY                     88314040
        *                                                      88314050
        *               CHECK IF 1ST 1/2 WORD                  88314060
        *                                                      88314070
0570 0  COOE            LO    WROSW   GET 1/2 WORD SWITCH      88314080
0571 0  4804            8SC   E                                88314090
0572 0  7006            MOX   TWRO3   GO SET UP NEXT WORD      88314100
        *                                                      88314110
        *               SET UP FOR 2NO 1/2 WORD               88314120
        *                                                      88314130
0573 0  COOC            LO    IOARA                            88314140
0574 0  1008            SLA   8       POSITION 2NO 1/2 WO      88314150
0575 0  000A            STO   IOARA                            88314160
0576 00 7401057F        MOX L WRDSW,1   BUMP WORD SWITCH       88314170
0578 0  70F2            MOX   XIOWR   GO WRITC 2ND 1/2 WO      88314180
        *                                                      88314190
        *               SET UP FOR NEXT WORD                   88314200
        *                                                      88314210
0579 0  7301      TWRO3 MOX   3 1     NEXT WORO INDEX          88314220
057A 00 7401057F        MOX L WROSW,1   BUMP WORD SWITCH       88314230
057C 0  70E2            MDX   TWRO2   GO GET NEXT WORO         88314240
        *                                                      88314250
        *               LOG   CONSTANTS                        88314260
        *                                                      88314270
0570 0  8103      TWRTO DC    /8103   LINE SP/CARRAIGE RTN     88314280
```

INTERRUPT FUNCTION TEST

```
057E 0  FFFF      TWRT1 OC    /FFFF   TERMINATOR               88314290
057F 0  0000      WROSW OC    0       1/2 WORO SWITCH          88314300
0580 0  0000      IOARA DC    0       OUTPUT AREA              88314310
        *                                                      88314320
0582 00 00000000        OEC   0                                88314330
        *                                                      88314340
0584 0  0000      PRSNS OC    /0000   PRINTER SENSE IOCC       88314350
                        OC    /3701                            88314360
0585 0  3701      PRSN  OC    0       NON RESET SENSE          88314370
0586 0  0000            OC    /3700                            88314380
0587 0  3700      PRWRT OC    /0000   PRINTER WRITE IOCC       88314390
0588 0  0000            OC    /3500                            88314400
0589 0  3500      TWSNS OC    /0000   TYPEWTR SENSE IOCC       88314410
058A 0  0000            OC    /0F03                            88314420
058B 0  0F03      TWWRT OC    IOARA   TYPEWTR WRITE IOCC       88314430
058C 0  0580            OC    /0902                            88314440
058D 0  0902                                                   88314450
        *                                                      88314460
        ****************************************               88314460
        *             1443 CODE TO 1816/1053  *                88314470
        *             COOE CONVERSION ROUTINE *                88314480
        ****************************************               88314490
058E 0  0000      COOCV OC    0                       SE       88314500
058F 0  6927            STX   1 COOC4+1   SAVE INOEX REGS      88314510
0590 0  6A28            STX   2 COOC4+3                        88314520
0591 0  6B29            STX   3 COOC4+5                        88314530
        *                                                      88314540
0592 0  1010            SLA   16      CLEAR LEFT HALF WORN     88314550
0593 0  0028            STO   LHINO   *INOICATOR               88314560
0594 0  6300            LOX   3 0                              88314570
        *                                                      88314580
0595 0  C028      CODC1 LO    COOWO   GFT WORD TO CONVERT      88314600
0596 0  1890            SRT   16      SET IN Q                 88314610
0597 0  C027            LO    LHINO                            88314620
0598 0  4820            8SC   Z       SKIP IF LEFT HALF        88314630
0599 0  1088            SLT   8       POSITION RIGHT HALF      88314640
        *                                                      88314650
059A 0  1010            SLA   16      ZONE TO ACCUM            88314660
0598 0  1084            SLT   4                                88314670
059C 0  0023            STO   COOOO                            88314680
059D 00 658005C0        LOX   I1 CODOO   IX 1 = ZONE          88314690
        *                                                      88314700
059F 0  1010            SLA   16      DIGIT TO ACCUM           88314710
05A0 0  1084            SLT   4                                88314720
05A1 0  001E            STO   COOOO                            88314730
05A2 00 668005C0        LOX   I2 COOOO   IX 2 = OIGIT         88314740
        *                                                      88314750
05A4 00 C50005C3        LO    L1 ZONE   GET ZONE TABLE AOORS   88314760
05A6 0  0001            STO   COOC2+1   SET IN CONVERSION WO   88314770
        *                                                      88314780
05A7 00 C6000000  COOC2 LO    L2 0    GET CONVERTEO CODE       88314790
05A9 00 070005C1        STO   L3 CO0001                       88314800
                                                               88314810
05A8 0  C013            LO    LHINO                            88314820
05AC 00 4C2005B2        BSC L COOC3,Z   BRNCH IF RIGHT HALF    88314830
05AE 00 740105BF        MOX L LHINO,1                          88314840
05B0 0  7301            MOX   3 1                              88314850
05B1 0  70E3            MOX   CODC1   GO CONVERT RIGHT HLF     88314860
        *                                                      88314870
05B2 0  COOE      COOC3 LO    CO0001  PACK CONVERTEO COOES     88314880
05B3 0  1008            SLA   8                                88314890
05B4 0  E800            OR    CO0002                           88314900
05B5 0  0008            STO   COOWO                            88314910
        *                                                      88314920
05B6 00 65000000  COOC4 LOX   L1 0    RESTORE INOEX KEGS       88314930
05B8 00 66000000        LOX   L2 0                             88314940
05BA 00 67000000        LOX   L3 0                             88314950
        *                                                      88314960
```

INTERRUPT FUNCTION TEST

```
058C 00 4C80058E          BSC   I  CODCV    RETURN TO USER      SX   8B314970
                      *                                               8B314980
                      *                                               8B314990
                      *                    CONSTANTS                  8B315000
                      *                                               8B315010
05BE 0  0000   CODWD OC     0              WORD LOCATION             8B315020
05BF 0  0000   LHIND OC     0              LEFT HALF INDICATOR       8B315030
05C0 0  0000   CODOO OC     0              WORK AREA                 8B315040
05C1 0  0000   CODO1 OC     0              CONVERTED LH CHARACT      8B315050
05C2 0  0000   CODO2 DC     0              CONVERTEO RH CHARACT      8B315060
                      *                                               8B315070
                      *                    1443 TO 1816/1053  CODE    8B315080
                      *                    CONVERSION TABLES          8B315090
                      *                                               8B315100
                      *                                               8B315110
05C3 0  05C7   ZONE  OC     ZONEN          NO ZONE                   8B315120
05C4 0  0502          DC     ZONE1          0 ZONE                   8B315130
05C5 0  05DD          DC     ZONE2          11 ZONE                  8B315140
05C6 0  05E7          OC     ZONE3          12 ZONE                  8B315150
                      *                                               8B315160
05C7 0  0021   ZONEN OC     /0021          SPACE                     8B315170
05C8 0  OOFC          OC     /00FC          1                        8B315180
05C9 0  00D8          OC     /00D8          2                        8B315190
05CA 0  00DC          OC     /00DC          3                        8B315200
05CB 0  OOF0          DC     /00F0          4                        8B315210
05CC 0  00F4          OC     /00F4          5                        8B315220
05CD 0  0000          OC     /0000          6                        8B315230
05CE 0  0004          DC     /0004          7                        8B315240
05CF 0  00E4          OC     /00E4          8                        8B315250
05D0 0  00E0          OC     /00E0          9                        8B315260
05D1 0  00C4          DC     /00C4          0                        8B315270
05D2 0  0000   ZONE1 DC     0                                        8B315280
05D3 0  0000          OC     0                                        8B315290
05D4 0  009A          OC     /009A          S                        8B315300
05D5 0  009E          OC     /009E          T                        8B315310
05D6 0  0082          OC     /0082          U                        8B315320
05D7 0  0086          OC     /0086          V                        8B315330
05D8 0  0092          OC     /0092          W                        8B315340
05D9 0  0096          OC     /0096          X                        8B315350
05DA 0  00A6          OC     /00A6          Y                        8B315360
05DB 0  00A2          OC     /00A2          Z                        8B315370
05DC 0  0021          OC     /0021          SPACE                    8B315380
05DD 0  0000   ZONE2 OC     0                                        8B315390
05DE 0  007E          OC     /007E          J                        8B315400
05DF 0  005A          OC     /005A          K                        8B315410
05E0 0  005E          OC     /005E          L                        8B315420
05E1 0  0072          OC     /0072          M                        8B315430
05E2 0  0076          DC     /0076          N                        8B315440
05E3 0  0052          OC     /0052          O                        8B315450
05E4 0  0056          OC     /0056          P                        8B315460
05E5 0  0066          DC     /0066          Q                        8B315470
05E6 0  0062          OC     /0062          R                        8B315480
05E7 0  0000   ZONE3 OC     0                                        8B315490
05E8 0  003E          DC     /003E          A                        8B315500
05E9 0  001A          OC     /001A          B                        8B315510
05EA 0  001E          OC     /001E          C                        8B315520
05EB 0  0032          OC     /0032          D                        8B315530
05EC 0  0036          OC     /0036          E                        8B315540
05ED 0  0012          OC     /0012          F                        8B315550
05EE 0  0016          OC     /0016          G                        8B315560
05EF 0  0026          OC     /0026          H                        8B315570
05F0 0  0022          OC     /0022          I                        8B315580
05F1 0  0086          OC     /0086          0 ERROR                   8B315590
05F2 0  0000          DC     /0000          PERIOD                   8B315600
                      *                                               8B315610
                      *                                               8B315620
                      *                    1 MINUTE OELAY             8B315630
                      *                                               8B315640
```

INTERRUPT FUNCTION TEST

```
05F3 0  0000   DELAY DC     0                                  SE   8B315650
05F4 00 65000300      LDX  L1 /0300    SET DELAY INDEX              8B315660
05F6 0  C008          LD     DELY!     PICKUP OELAY CONSTAT         8B315670
05F7 0  D008          STO    DELY2     SET IN DELAY SWITCH          8B315680
05F8 00 74FF0600      MDX  L  DELY2,-1 SKIP WHEN SW = 0             8B315690
05FA 0  70FD          MDX     OELAY+5  BRN TO OECRFMENT SW          8B315700
05FB 0  71FF          MDX   1 -1       SKIP WHEN OLY IX = 0         8B315710
05FC 0  70F9          MDX     DELAY+3  BR TO RELOAO OLY SW          8B315720
05FD 00 4C8005F3      BSC   I  DELAY   EXIT SUBROUTINE         SX   8B315730
                      *                                             8B315740
05FF 0  803F   DELY1 DC     /8D3F                                   8B315750
0600 0  0000   DELY2 OC     0                                        8B315760
                      *                                             8B315770
                      *                    ROUTINE 1 TRAP ROUTINE    8B315780
                      *                                             8B315790
0601 0  0000   POLL  OC     0          ENTRY                  1E   8B315800
0602 00 C00006D4      XIO  L  ILSW     INSURE NO ILSW ON           8B315810
0604 0  C0FC          LO     POLL                                   8B315820
0605 00 D40001F6      STO  L  ICTR     SAVE 1 COUNT AT INTP  IX   8B315830
0607 00 4C400000 PLEXT BOSC L  0       RETURN TO MAIN LINE   IX   8B315840
                      *                                             8B315850
                      *                                             8B315860
                      *                    ROUTINE TO SERVICE NON    8B315870
                      *                    PROGRAM GENERATED INTERPT 8B315880
                      *                                             8B315890
0609 0  0000   SVINT DC     0                                  1E   8B315900
060A 0  002D          STO    SVIO      SAVE ACCUMULATOR            8B315910
060B 00 0C000604      XIO  L  ILSW     RESET 1LSW                  8B315920
060D 00 74020637      MDX  L  SV7,2    SET PASS SWITCH             8B315930
060F 0  1010          SLA    16                                    8B315940
0610 0  D023          STO    SV4       CLEAR AREA CODE CNTR        8B315950
0611 0  C020          LO     SV2                                   8B315960
0612 0  0023          STO    SV6       SET IOCC 1N USE SW          8B315970
0613 0  C01D   SVINO LO     SV1                                   8B315980
0614 0  D020          STO    SV5       SET MODIF1ER COUNTER        8B315990
0615 0  C01E   SVIN1 LO     SV4       *                            8B316000
0616 0  100B          SLA    11        *                            8B316010
0617 0  E810          OR     SV5       *BUILO IOCC                  8B316020
0618 0  E810          OR     SV6       *                            8B316030
0619 0  D01F          STO    SVIO+1    *                            8B316040
061A 0  081D          XIO    SVIO      SENSE DSW ANO RESET         8B316050
061B 00 74FF0635      MOX  L  SV5,-1   BRANCH IF NOT ALL MO        8B316060
061D 0  70F7          MOX     SVIN1                                8B316070
061E 00 74010634      MOX  L  SV4,1    INCREMENT AREA CODE         8B316080
0620 0  C013          LO     SV4       CHECK IF ALL AC USEO        8B316090
0621 0  900E          S      SVO       SKIP IF ALL AC USED         8B316100
0622 0  4808          BSC    *         GO SENSE W1TH NXT AC        8B316110
0623 0  70EF          MOX     SVINO    SKIP IF SECONO PASS         8B316120
0624 00 74FF0637      MDX  L  SV7,-1                               8B316130
0626 0  7001          MDX     *+1                                  8B316140
0627 0  7005          MOX     SVEXT-1                              8B316150
0628 0  C00A          LO     SV3                                   8B316160
0629 0  D00C          STO    SV6       SET 1OCC FOR P1             8B316170
062A 0  1010          SLA    16                                    8B316180
062B 0  0008          STO    SV4       SET AC FOR NEXT             8B316190
062C 0  70E6          MDX     SVINO    *PASS                        8B316200
062D 0  C00A          LO     SVIO      RESTORE ACCUMULATOR         8B316210
062E 00 4CC00609 SVEXT BOSC I  SVINT   EXIT                   IX   8B316220
                      *                                             8B316230
                      *                    ** CONSTANTS **          8B316240
                      *                                             8B316250
0630 0  001F   SVO   DC     /001F     NUMBER OF AREA COOES         8B316260
0631 0  00FF   SV1   OC     /00FF     NUMBER OF MODIFIERS          8B316270
0632 0  0701   SV2   OC     /0701     SENSE/RESET DSW              8B316280
0633 0  0700   SV3   DC     /0700     SENSE/RESET PISW             8B316290
0634 0  0000   SV4   OC     0         AREA COOE INDICATOR          8B316300
0635 0  0000   SV5   DC     0         MOOIFIER INDICATOR           8B316310
0636 0  0000   SV6   OC     0         IOCC IN USE                  8B316320
```

INTERRUPT FUNCTION TEST

```
0637 0  0000    SV7 OC      0           PASS SWITCH              88316330
0638    0000        BSS  E  0                                   88316340
0638 0  0000    SVIO OC     0           SENSE OSW IOCC          88316350
0639 0  0000        OC      0                                   88316360
                *                                               88316370
                *               INTERRUPT TRAP ROUTINES         88316380
                *                                               88316390
                *                                               88316400
                *               INTERRUPT  LEVEL ERROR          88316410
                *                 PRIORITY 1                    88316420
                *                                               88316430
                *                                               88316440
063A 0  0000    LVL01 OC    0                                   88316450
063B 0  404F        BSI     CMTRP    GO TO COMN TRAP RTN. SRC   88316460
063C 0  3529        OC      /3529    ER                         88316470
                *                                               88316480
                *                                               88316490
                *               INTERRUPT  LEVEL TRACE          88316500
                *                 PRIORITY 26                   88316510
                *                                               88316520
063D 0  0000    LVL26 OC    0                                   88316530
063E 0  404C        BSI     CMTRP    GO TO COMN TRAP RTN. SRC   88316540
063F 0  1329        OC      /1329    TR                         88316550
                *                                               88316560
                *                                               88316570
                *               INTERRUPT  LEVEL CE             88316580
                *                 PRIORITY 27                   88316590
                *                                               88316600
0640 0  0000    LVL27 OC    0                                   88316610
0641 0  4049        BSI     CMTRP    GO TO COMN TRAP RTN. SRC   88316620
0642 0  3335        OC      /3335    CE                         88316630
                *                                               88316640
                *                                               88316650
                *               INTERRUPT  LEVEL 0              88316660
                *                 PRIORITY 2                    88316670
                *                                               88316680
0643 0  0000    LVL02 OC    0                                   88316690
0644 0  4046        BSI     CMTRP    GO TO COMN TRAP RTN. SRC   88316700
0645 0  0A0A        OC      /0A0A    00                         88316710
                *                                               88316720
                *                                               88316730
                *               INTERRUPT  LEVEL 1              88316740
                *                 PRIORITY 3                    88316750
                *                                               88316760
0646 0  0000    LVL03 DC    0                                   88316770
0647 0  4043        BSI     CMTRP    GO TO COMN TRAP RTN. SRC   88316780
0648 0  0A01        OC      /0A01    01                         88316790
                *                                               88316800
                *                                               88316810
                *               INTERRUPT  LEVEL 2              88316820
                *                 PRIORITY 4                    88316830
                *                                               88316840
0649 0  0000    LVL04 OC    0                                   88316850
064A 0  4040        BSI     CMTRP    GO TO COMN TRAP RTV. SRC   88316860
064B 0  0A02        OC      /0A02    02                         88316870
                *                                               88316880
                *                                               88316890
                *               INTERRUPT  LEVEL 3              88316900
                *                 PRIORITY 5                    88316910
                *                                               88316920
064C 0  0000    LVL05 DC    0                                   88316930
064D 0  4030        BSI     CMTRP    GO TO COMN TRAP RTN. SRC   88316940
064E 0  0A03        OC      /0A03    03                         88316950
                *                                               88316960
                *                                               88316970
                *               INTERRUPT  LEVEL 4              88316980
                *                 PRIORITY 6                    88316990
                *                                               88317000
064F 0  0000    LVL06 DC    0                                   
```

INTERRUPT FUNCTION TEST

```
0650 0  403A        8SI     CMTRP    GO TO COMN TRAP RTN. SRC   88317010
0651 0  0A04        OC      /0A04    04                         88317020
                *                                               88317030
                *                                               88317040
                *               INTERRUPT  LEVEL 5              88317050
                *                 PRIORITY 7                    88317060
                *                                               88317070
0652 0  0000    LVL07 DC    0                                   88317080
0653 0  4037        BSI     CMTRP    GO TO COMN TRAP RTN. SRC   88317090
0654 0  0A05        OC      /0A05    05                         88317100
                *                                               88317110
                *                                               88317120
                *               INTERRUPT  LEVEL 6              88317130
                *                 PRIORITY 8                    88317140
                *                                               88317150
0655 0  0000    LVL08 OC    0                                   88317160
0656 0  4034        BSI     CMTRP    GO TO COMN TRAP RTN. SRC   88317170
0657 0  0A06        OC      /0A06    06                         88317180
                *                                               88317190
                *                                               88317200
                *               INTERRUPT  LEVEL 7              88317210
                *                 PRIORITY 9                    88317220
                *                                               88317230
0658 0  0000    LVL09 OC    0                                   88317240
0659 0  4031        BSI     CMTRP    GO TO COMN TRAP RTN. SRC   88317250
065A 0  0A07        OC      /0A07    07                         88317260
                *                                               88317270
                *                                               88317280
                *               INTERRUPT  LEVEL 8              88317290
                *                 PRIORITY 10                   88317300
                *                                               88317310
065B 0  0000    LVL10 OC    0                                   88317320
065C 0  402E        BSI     CMTRP    GO TO COMN TRAP RTN. SRC   88317330
065D 0  0A08        OC      /0A08    08                         88317340
                *                                               88317350
                *                                               88317360
                *               INTERRUPT  LEVEL 9              88317370
                *                 PRIORITY 11                   88317380
                *                                               88317390
065E 0  0000    LVL11 OC    0                                   88317400
065F 0  4028        BSI     CMTRP    GO TO COMN TRAP RTN. SRC   88317410
0660 0  0A09        OC      /0A09    09                         88317420
                *                                               88317430
                *                                               88317440
                *               INTERRUPT  LEVEL 10             88317450
                *                 PRIORITY 12                   88317460
                *                                               88317470
0661 0  0000    LVL12 OC    0                                   88317480
0662 0  4028        BSI     CMTRP    GO TO COMN TRAP RTN. SRC   88317490
0663 0  010A        DC      /010A    10                         88317500
                *                                               88317510
                *                                               88317520
                *               INTERRUPT  LEVEL 11             88317530
                *                 PRIORITY 13                   88317540
                *                                               88317550
0664 0  0000    LVL13 OC    0                                   88317560
0665 0  4025        8SI     CMTRP    GO TO COMN TRAP RTN. SRC   88317570
0666 0  0101        OC      /0101    11                         88317580
                *                                               88317590
                *                                               88317600
                *               INTERRUPT  LEVEL 12             88317610
                *                 PRIORITY 1N                   88317620
                *                                               88317630
0667 0  0000    LVL14 OC    0                                   88317640
0668 0  4022        8SI     CMTRP    GO TO COMN TRAP RTN. SRC   88317650
0669 0  0102        OC      /0102    12                         88317660
                *                                               88317670
                *                                               88317680
```

INTEPRUPT FUNCTION TEST

```
                    *              INTERRUPT  LEVEL 13         88317690
                    *                  PRIORITY 15             88317700
                    *                                          88317710
066A 0  0000    LVL15 DC    0                                  88317720
0668 0  401F          BSI   CMTRP    GO TO COMN TRAP RTN. SRC  88317730
066C 0  0103          DC    /0103    13                        88317740
                    *                                          88317750
                    *                                          88317760
                    *              INTERRUPT  LEVEL 14         88317770
                    *                  PRIORITY 16             88317780
                    *                                          88317790
066D 0  0000    LVL16 DC    0                                  88317800
066E 0  401C          BSI   CMTRP    GO TO COMN TRAP RTN. SRC  88317810
066F 0  0104          DC    /0104    14                        88317820
                    *                                          88317830
                    *              INTERRUPT  LEVEL 15         88317840
                    *                  PRIORITY 17             88317850
                    *                                          88317860
                    *                                          88317870
0670 0  0000    LVL17 DC    0                                  88317880
0671 0  4019          BSI   CMTRP    GO TO COMN TRAP RTN. SRC  88317890
0672 0  0105          DC    /0105    15                        88317900
                    *                                          88317910
                    *                                          88317920
                    *              INTERRUPT  LEVEL 16         88317930
                    *                  PRIORITY 18             88317940
                    *                                          88317950
0673 0  0000    LVL18 DC    0                                  88317960
0674 0  4016          BSI   CMTRP    GO TO COMN TRAP RTN. SRC  88317970
0675 0  0106          DC    /0106    16                        88317980
                    *                                          88317990
                    *                                          88318000
                    *              INTERRUPT  LEVEL 17         88318010
                    *                  PRIORITY 19             88318020
                    *                                          88318030
                    *                                          88318040
0676 0  0000    LVL19 DC    0                                  88318040
0677 0  4013          BSI   CMTRP    GO TO COMN TRAP RTN. SRC  88318050
0678 0  0107          DC    /0107    17                        88318060
                    *                                          88318070
                    *                                          88318080
                    *              INTERRUPT  LEVEL 18         88318090
                    *                  PRIORITY 20             88318100
                    *                                          88318110
0679 0  0000    LVL20 DC    0                                  88318120
067A 0  4010          BSI   CMTRP    GO TO COMN TRAP RTN. SRC  88318130
067B 0  0108          DC    /0108    18                        88318140
                    *                                          88318150
                    *                                          88318160
                    *              INTERRUPT  LEVEL 19         88318170
                    *                  PRIORITY 21             88318180
                    *                                          88318190
067C 0  0000    LVL21 DC    0                                  88318200
067D 0  400D          BSI   CMTRP    GO TO COMN TRAP RTN. SRC  88318210
067E 0  0109          DC    /0109    19                        88318220
                    *                                          88318230
                    *                                          88318240
                    *              INTERRUPT  LEVEL 20         88318250
                    *                  PRIORITY 22             88318260
                    *                                          88318270
067F 0  0000    LVL22 DC    0                                  88318280
0680 0  400A          BSI   CMTRP    GO TO COMN TRAP RTN. SRC  88318290
0681 0  020A          DC    /020A    20                        88318300
                    *                                          88318310
                    *                                          88318320
                    *              INTERRUPT  LEVEL 21         88318330
                    *                  PRIORITY 23             88318340
                    *                                          88318350
0682 0  0000    LVL23 DC    0                                  88318360
```

INTEPRUPT FUNCTION TEST

```
0683 0  4007          BSI   CMTRP    GO TO COMN TPAP RTN SPC   88318370
0684 0  0201          OC    /0201    21                        88318380
                    *                                          88318390
                    *                                          88318400
                    *              INTERRUPT LEVEL 22          88318410
                    *                  PRIORITY 24             88318420
                    *                                          88318430
0685 0  0000    LVL24 DC    0                                  88318440
0686 0  4004          BSI   CMTRP    GO TO COMN TRAP RTN  SRC  88318450
0687 0  0202          DC    /0202    22                        88318460
                    *                                          88318470
                    *                                          88318480
                    *              INTERRUPT LEVEL 23          88318490
                    *                  PRIOTITY 25             88318500
                    *                                          88318510
0688 0  0000    LVL25 DC    0                                  88318520
0689 0  4001          BSI   CMTRP    GO TO COMN TRAP RTN  SRC  88318530
068A 0  0203          OC    /0203    23                        88318540
                    *                                          88318550
                    *                                          88318560
                    *              COMMON TRAP ROUTINE         88318570
                    *                                          88318580
068B 0  0000    CMTRP DC    0                                  88318590
068C 00 C4800688      LD  I CMTRP    NO.OF LVL. SERVICED       88318600
068E 00 D4000995      STO L INMJ4+18 SET IN MESSAGE            88318610
0690 00 9400098E      S   L INM04+11 SUB REQUEST NUMBER        88318620
0692 0  D037          STO   CNM00    SAVE                      88318630
0693 0  0840          XIO   ILSW     SENSE AND SAVE ILSW       88318640
0694 0  D041          STO   ILSAV                              88318650
                    *                                          88318660
                    *              EXIT IF ROUTINES 4 OR 5     88318670
                    *                                          88318680
                    *                                          88318690
0695 00 C400018F      LD  L RTNNO                              88318690
0697 00 F4000428      EOR L CN403                              88318700
0699 00 4E180000      BSC L2 0,+-    ROUTINE 5 EXIT            88318710
069B 00 C400018F      LD  L RTNNO                              88318720
069D 00 F4000318      EOR L CN303                              88318730
069F 00 4C180306      BSC L RT308,+- ROUTINE 4 EXIT            88318740
                    *                                          88318750
                    *              CHECK WHICH PASS OF RTN.1   88318760
                    *                                          88318770
06A1 00 C4000281      LD  L CN102                              88318780
06A3 00 4C2006A8      BSC L CMT02,Z                            88318790
06A5 00 440006D7      BSI L SERVC    SERVICE DISABLED     SRC  88318800
06A7 0  7004          MDX   CMT00    +INTERRUPT                88318810
                    *                                          88318820
                    *              CHECK IF PROPER LEVEL SRVC  88318830
                    *                                          88318840
06A8 0  C021    CMT02 LD    CNM00                              88318850
06A9 00 4C180684      BSC L CMT03,+- BRANCH ON PROPR LVL       88318860
                    *                                          88318870
06AB 0  7005          MDX   CMT01    WRONG LEVEL SERVICED      88318880
                    *                                          88318890
                    *                                          88318900
      ***********************************************          88318910
06AC 00 440004F5 CMT00 BSI L ERROR   PRINT REQ INTERRUPTD SRC  88318920
06AE 0  099A          DC    INM05    WITH DISABLE SW ON        88318930
      ***********************************************          88318940
06AF 00 4C000238      BSC L RT104                              88318950
      ***********************************************          88318960
06B1 00 440004F5 CMT01 BSI L ERROR   PRINT WRONG LEVEL    SRC  88318970
06B3 0  0983          DC    INM04    SERVICED                  88318980
      ***********************************************          88318990
                    *                                          88319000
06B4 00 C4000979 CMT03 LD  L INM03+11 CK IF LVL INTERNAL       88319010
06B6 00 9400092E      S   L INLVT                              88319020
06B8 00 4C5806CB      BOSC L CMT06,+- BRANCH IF INTERNAL       88319030
                    *                                          88319040
```

INTERRUPT FUNCTION TEST

```
06BA 0  C01B           LD     ILSAV      CHECK ILSW                    88319050
06BB 00 4C60068F       BOSC L CMT05,Z    BRANCH IF ILSW NOT 0          88319060
                                                                       88319070
06B0 00 4C400238       BOSC L RT104      RETURN TO ROUTINE 1           88319080
                                                                       88319090
                *****************************************************  88319100
068F 00 440004F5  CMT05 BSI L ERROR      PRINT ILSW NOT ZERO SRC       88319110
06C1 D  0A45            DC     INM14                                   88319120
                                                                       88319130
                *****************************************************  88319140
06C2 00 C4000199  CMT04 LD  L RUNSW      BYPASS WAIT IF RUN            88319150
06C4 00 4C2006C8        8SC L CNM00-2,Z  MODE WITH OUT STOPS           88319160
06C6 0  C00F            LD     ILSAV      ILSW TO A                    88319170
                                                                       88319180
06C7 D  3015      WT15  WAIT   21         ILSW NOT 0  PROG INT         88319190
                                         ERROR ILSW                   88319200
06C8 D0 4C00023B        8SC L RT104      CONTINUE                      88319210
06CA 0  000D      CNM00 DC     0                                       88319220
                                                                       88319230
06CB 0  C00A      CMT06 LD     ILSAV                                   88319240
06CC 00 4C2806C8        8SC L CNM00-2,+Z                               88319250
                *****************************************************  88319260
06CE 00 440004F5        BSI L  ERROR     WRONG ILSW ON OP      SRC     88319270
06D0 D  0984            DC     INM06      CDOE VIOLATE                  88319280
                *****************************************************  88319290
06D1 D  70FD            MDX    CMT04      CONTINUE                      88319300
06D2 00 00000000        DEC    0                                       88319310
06D4 0  D000      ILSW  DC     /0000      SENSE ILSW IOCC              88319320
06D5 0  0300            DC     /0300                                   88319330D
                                                                       88319340D
0606 0  DD00      ILSAV DC     0          SAVE FOR ILSW                88319350
                                                                       88319360
                                                                       88319370
06D7 D  0000      SERVC DC     0                                       88319380
06D8 0D 0C000436        XIO L  CNSNS                                   88319390
06DA D  08F9            XIO    ILSW       SENSE ILSW                   88319400
06DB 0D 4CC006D7        BOSC I SERVC      EXIT       ESET      SX      88319410
                                                                       88319420
                *                                                      88319430
                *                PRIORITY TRAP ROUTINES                88319440
                *                                                      88319450
                *                INTERRUPT ROUTINE LEVEL ER            88319460
                *                                                      88319470
                                                                       88319480D
06DE 00 0D000000        DEC    0                                       88319490
06E0 0  0000      PRID1 DC     0                                       88319500
06E1 D  C00B            LD     REQER      SET LEVEL ER REQUEST         88319510
06E2 00 D5000A78        STO L1 IN16V      NUMBER IN REQ SEQ MG         88319520
06E4 00 D6000A88        STO L2 IN17V      SET ER IN SER SEQ MG         88319530
06E6 0  7202            MDX    2 2                                     88319540
06E7 00 0C000436        XIO L  CNSNS      WRONG BTTN PROTECT           88319550
06E9 00 DC0006D4        XIO L  ILSW       SENSE RESET                  88319560
06E8 00 4CC006E0        BOSC I PRIO1                                   88319570
06ED 0  3529      REQER  DC    /3529      ER                           88319580
                *                                                      88319590
                *                INTERRUPT ROUTINE LEVEL TR            88319600
                *                                                      88319610
06EE 0  0000      PRI26 DC     0                                       88319620
06EF 0  C00E            LD     REQTR      LEVEL TR REQUEST TO          88319630
06F0 00 D5000A78        STO L1 IN16V      REQUEST SEQUENCE MSG         88319640
06F2 0  7102            MDX    1 2                                     88319650
06F3 0  73FF            MDX    3 -1                                    88319660
06F4 0  7006            MDX    PR260      NOT LAST INTERRUPT           88319670
                *                                                      88319680
                *                SERVICE THIS LEVEL                    88319690
06F5 0  C008      PR261 LD     REQTR      LEVEL TR TO LEVEL            88319700
06F6 00 D6000AB8        STO L2 IN17V      SRVCO SEQUENCE MSG           88319710
06F8 0  7202            MDX    2 2                                     88319720
```

INTERRUPT FUNCTION TEST

```
06F9 00 4C8006EE        BSC I  PRI26      NON RESET BRANCH             88319730
                *                                                      88319740
06FB 0  0804      PR260 XIO    PR262      ISSUE INTERRUPT              88319750
06FC 0  1000            NOP                                            88319760
06FD 0  70F7            MDX    PR261                                   88319770
                                                                       88319780
06FE C  1329      REQTR DC     /1329      TR                           88319790
06FF 0  0000            DC     0                                       88319800
                *                                                      88319810
0700 0  0000      PR262 DC     0          LOWEST LEVEL IOCC            88319820
0701 0  0000            DC     0                                       88319830
                *                                                      88319840
                *                INTERRUPT ROUTINE LEVEL CE            88319850
                *                                                      88319860
0702 0  0000      PRI27 DC     0                                       88319870
0703 0  C00E            LD     REQCE      LEVEL CE REQUEST TO          88319880
0704 00 05000A78        STO L1 IN16V      REQUEST SEQUENCE MSG         88319890
0706 0  7102            MDX    1 2                                     88319900
0707 0  73FF            MDX    3 -1                                    88319910
D708 0  7006            MDX    PR270                                   88319920
                *                                                      88319930
                *                SERVICE THIS LEVEL                    88319940
                *                                                      88319950
0709 0  C008      PR271 LD     REQCE      LEVEL CE TO LEVEL            88319960
070A 00 06000A88        STO L2 INI7V      SRVCD SEQUENCE MSG           88319970
070C 0  7202            MDX    2 2                                     88319980
070D D0 4CC0000A        BOSC I /000A      BRANCH RESET                 88319990
                *                                                      88320000
070F 0  0804      PR270 XIO    PR272      ISSUE INTERRUPT              88320010
0710 0  1000            NOP                                            88320020
0711 0  70F7            MDX    PR271                                   88320030
                *                                                      88320040
0712 0  3335      REQCE DC     /3335      CE                           88320050
D713 0  0000            DC     0                                       88320060
                *                                                      88320070
0714 0  0000      PR272 DC     0          LOWEST LEVEL IOCC            88320080
0715 0  0000            DC     0                                       88320090
                *                                                      88320100
                *                INTERRUPT ROUTINE LEVEL 00            88320110
                *                                                      88320120
0716 0  0000      PRI02 DC     0                                       88320130
0717 0  C00E            LD     REQ00      LEVEL 00 REQUEST TO          88320140
0718 00 D5000A78        STO L1 IN16V      REQUEST SEQUENCE MSG         88320150
071A 0  7102            MDX    1 2                                     88320160
071B 0  73FF            MDX    3 -1                                    88320170
071C 0  7006            MDX    PR020      NOT LAST INTERRUPT           88320180
                *                                                      88320190
                *                SERVICE THIS INTERRUPT               88320200
                *                                                      88320210
071D 0  C008      PR021 LD     REQ00      LEVEL 00 TO LEVEL            88320220
071E 00 D6G00A88        STO L2 IN17V      SRVCO SEQUENCE MSG           88320230
0720 0  7202            MDX    2 2                                     88320240
0721 00 4CC00716        8OSC I PRIO2      BRANCH RESET                 88320250
                                                                       88320260
D723 0  0100      PR020 DC     /D100      ILLEGAL OP INTRP ER          88320270
0724 0  1000            NOP                                            88320280
0725 0  70F7            MDX    PR021                                   88320290
                *                                                      88320300
0726 0  0A0A      REQ00 DC     /0A0A      00                           88320310
0727 0  0000            DC     0                                       88320320
                *                                                      88320330
0728 0  0000            DC     0                                       88320340
0729 0  0000            DC     0                                       88320350
                *                                                      88320360
                *                INTERRUPT ROUTINE LEVEL 01            88320370
                *                                                      88320380
                                                                       88320390
072A 0  0000      PRI03 DC     0                                       88320400
072B 0  C00E            LD     REQ01      LEVEL 01 REQUEST TO          
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072C 00 05000A78        STO  L1 IN16V    REQUEST SEQUENCE MSG    88320410
072E 0  7102            MDX     1 2                              88320420
072F 0  73FF            MDX     3 -1                             88320430
0730 0  7006            MDX     PRO30       NOT LAST INTERRUPT   88320440
           *                                                    88320450
           *               SERVICE THIS INTERRUPT               88320460
           *                                                    88320470
0731 0  C008    PRO31 LD    REQ01   LEVEL 01 TO LEVEL           88320480
0732 00 06000A88        STO  L2 IN17V    SRVCD SEQUENCE MSG     88320490
0734 0  7202            MDX     2 2                              88320500
0735 00 4CC0072A        BOSC I  PRIO3       BRANCH RESET         88320510
           *                                                    88320520
0737 0  0804    PRO30 XIO    PRO32   INTERRUPT FOR LVL          88320530
0738 0  1000            NOP                                     88320540
0739 0  70F7            MDX     PRO31                            88320550
           *                                                    88320560
073A 0  0A01    REQ01 DC    /0A01   01                          88320570
073B 0  0000            DC    0                                 88320580
           *                                                    88320590
073C 0  8000    PRO32 DC    /8000   INTRP 00 IOCC               88320600
073D 0  04A0            DC    /04A0                              88320610
           *                                                    88320620
           *               INTERRUPT ROUTINE LEVEL 02           88320630
           *                                                    88320640
073E 0  0000    PRIO4 DC    0                                   88320650
073F 0  C00E            LD    REQ02   LEVEL 01 REQUEST TO        88320660
0740 00 05000A78        STO  L1 IN16V    REQUEST SEQUENCE MSG   88320670
0742 0  7102            MDX     1 2                              88320680
0743 0  73FF            MDX     3 -1                             88320690
0744 0  7006            MDX     PRO40       NOT LAST INTERRUPT   88320700
           *                                                    88320710
           *               SERVICE THIS INTERRUPT               88320720
           *                                                    88320730
0745 0  C008    PRO41 LD    REQ02   LEVEL 02 TO LEVEL           88320740
0746 00 06000AB8        STO  L2 IN17V    SRVCD SEQUENCE MSG     88320750
0748 0  7202            MDX     2 2                              88320760
0749 00 4CC0073E        BOSC I  PRIO4       BRANCH RESET         88320770
           *                                                    88320780
074B 0  0804    PRO4G XIO    PRO42   INTERRUPT FOR LVL 02       88320790
074C 0  1000            NOP                                     88320800
074D 0  70F7            MDX     PRO41                            88320810
           *                                                    88320820
074E 0  0A02    REQ02 DC    /0A02   02                          88320830
074F 0  0000            DC    0                                 88320840
           *                                                    88320850
0750 0  4000    PRO42 DC    /4000   INTRP 01 IOCC               88320860
0751 0  04A0            DC    /04A0                              88320870
           *                                                    88320880
           *               INTERRUPT ROUTINE LEVEL 03           88320890
           *                                                    88320900
0752 0  0000    PRIO5 DC    0                                   88320910
0753 0  C00E            LD    REQ03   LEVEL 03 REQUEST TO        88320920
0754 00 05000A78        STO  L1 IN16V    REQUEST SEQUENCE MSG   88320930
0756 0  7102            MDX     1 2                              88320940
0757 0  73FF            MDX     3 -1                             88320950
0758 0  7006            MDX     PRO50       NOT LAST INTERRUPT   88320960
           *                                                    88320970
           *               SERVICE THIS INTERRUPT               88320980
           *                                                    88320990
0759 0  C008    PRO51 LD    REQ03   LEVEL 03 TO LEVEL           88321000
075A 00 06000AB8        STO  L2 IN17V    SRVCD SEQUENCE MSG     88321010
075C 0  7202            MDX     2 2                              88321020
075D 00 4CC00752        BOSC I  PRIO5       BRANCH RESET         88321030
           *                                                    88321040
075F 0  0804    PRO50 XIO    PRC52   INTERRUPT FOR LVL 01       88321050
0760 0  1000            NOP                                     88321060
0761 0  70F7            MDX     PRO51                            88321070
           *                                                    88321080
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0762 0  0A03    REQ03 DC    /0A03   03                          88321090
0763 0  0000            DC    0                                 88321100
           *                                                    88321110
0764 0  2000    PRO52 DC    /2000   INTRP 01 IOCC               88321120
0765 0  04A0            DC    /04A0                              88321130
           *                                                    88321140
           *               INTERRUPT ROUTINE LEVEL 04           88321150
           *                                                    88321160
0766 0  0000    PRIO6 DC    0                                   88321170
0767 0  C00E            LD    REQ04   LEVEL 04 REQUEST TO        88321180
0768 00 05000A78        STO  L1 IN16V    REQUEST SEQUENCE MSG   88321190
076A 0  7102            MDX     1 2                              88321200
076B 0  73FF            MDX     3 -1                             88321210
076C 0  7006            MDX     PRO60       NOT LAST INTERRUPT   88321220
           *                                                    88321230
           *               SERVICE THIS INTERRUPT               88321240
           *                                                    88321250
076D 0  C008    PRO61 LD    REQ04   LEVEL 04 TO LEVEL           88321260
076E 00 06000A88        STO  L2 IN17V    SRVCD SEQUENCE MSG     88321270
0770 0  7202            MDX     2 2                              88321280
0771 00 4CC00766        BOSC I  PRIO6       BRANCH RESET         88321290
           *                                                    88321300
0773 0  0804    PRO60 XIO    PRO62   INTERRUPT FOR LVL 03       88321310
0774 0  1000            NOP                                     88321320
0775 0  70F7            MDX     PRO61                            88321330
           *                                                    88321340
0776 0  0A04    REQ04 DC    /0A04   04                          88321350
0777 0  0000            DC    0                                 88321360
0778 0  1000    PRO62 DC    /1000   INTRP 03 IOCC               88321370
0779 0  04A0            DC    /04A0                              88321380
           *                                                    88321390
           *               INTERRUPT ROUTINE LEVEL 05           88321400
           *                                                    88321410
077A 0  0000    PRIO7 DC    0                                   88321420
077B 0  C00E            LD    REQ05   LEVEL 05 REQUEST TO        88321430
077C 00 05000A78        STO  L1 IN16V    REQUEST SEQUENCE MSG   88321440
077E 0  7102            MDX     1 2                              88321450
077F 0  73FF            MDX     3 -1                             88321460
0780 0  7006            MDX     PRO70       NOT LAST INTERRUPT   88321470
           *                                                    88321480
           *               SERVICE THIS INTERRUPT               88321490
           *                                                    88321500
0781 0  C008    PRO71 LD    REQ05   LEVEL 05 TO LEVEL           88321510
0782 00 06000A88        STO  L2 IN17V    SRVCD SEQUENCE MSG     88321520
0784 0  7202            MDX     2 2                              88321530
0785 00 4CC0077A        BOSC I  PRIO7       BRANCH RESET         88321540
           *                                                    88321550
0787 0  0804    PRO70 XIO    PRO72   INTERRUPT FOR LVL 04       88321560
0788 0  1000            NOP                                     88321570
0789 0  70F7            MDX     PRO71                            88321580
           *                                                    88321590
078A 0  0A05    REQ05 DC    /0A05   05                          88321600
078B 0  0000            DC    0                                 88321610
           *                                                    88321620
078C 0  0800    PRO72 DC    /0800   INTRP 04 IOCC               88321630
078D 0  04A0            DC    /04A0                              88321640
           *                                                    88321650
           *               INTERRUPT ROUTINE LEVEL 06           88321660
           *                                                    88321670
078E 0  0000    PRIO8 DC    0                                   88321680
078F 0  C00E            LD    REQ06   LEVEL 06 REQUEST TO        88321690
0790 00 05000A78        STO  L1 IN16V    REQUEST SEQUENCE MSG   88321700
0792 0  7102            MDX     1 2                              88321710
0793 0  73FF            MDX     3 -1                             88321720
0794 0  7006            MDX     PRO80                            88321730
           *                                                    88321740
           *               SERVICE THIS INTERRUPT               88321750
           *                                                    88321760
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INTERRUPT FUNCTION TEST

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0795 0  C008    PRO81 LO     REQ06    LEVEL 06 TO LEVEL      88321770
0796 00 D6000AB8       STO L2 IN17V   SRVCO SEQUENCE MSG     88321780
0798 0  7202           MOX    2 2                            88321790
0799 00 4CC0078E       8OSC 1 PRIO8   BRANCH RESET           88321800
 *                                                           88321810
079B 0  0804    PRO80 XIO    PRO82    INTERRUOT FOR LVL 05   88321820
079C 0  1000           NOP                                   88321830
079D 0  70F7           MOX    PRO61                          88321840
 *                                                           88321850
079E 0  0A06    REQ06 OC     /0A06    06                     88321860
079F 0  0000           OC     0                              88321870
 *                                                           88321880
07A0 0  0400    PRO82 OC     /0400    INTRP 05 IOCC          88321890
07A1 0  04A0           OC     /04A0                          88321900
 *                                                           88321910
 *                     INTERRUPT ROUTINE LEVEL 07            88321920
 *                                                           88321930
07A2 0  0000    PRIO9 OC     0                               88321940
07A3 0  C00E           LO     REQ07    LEVEL 07 REQUEST TO    88321950
07A4 00 05000A78       STO L1 IN16V   REQUEST SEQUENCE MSG   88321960
07A6 0  7102           MOX    1 2                            88321970
07A7 0  73FF           MOX    3 -I                           88321980
07A8 0  7006           MOX    PRO90    NOT LAST INTERRUPT    88321990
 *                                                           88322000
 *                     SERVICE THIS INTERRUPT                88322010
 *                                                           88322020
07A9 0  C008    PRO91 LO     REQ07    LEVEL 07 TO LEVEL      88322030
07AA 00 D6000A88       STO L2 IN17V   SRVCO SEQUENCE MSG     88322040
07AC 0  7202           MOX    2 2                            88322050
07AD 00 4CC007A2       8OSC I PRIO9   BRANCH RESET           88322060
 *                                                           88322070
07AF 0  0804    PRO90 XIO    PRO92    INTERRUPT FOR LVl 06   88322080
07B0 0  1000           NOP                                   88322090
07B1 0  70F7           MOX    PRO91                          88322100
 *                                                           88322110
07B2 0  0A07    REQ07 OC     /0A07    07                     88322120
07B3 0  0000           OC     0                              88322130
 *                                                           88322140
07B4 0  0200    PRO92 OC     /0200    INTRP 06 IOCC          88322150
07B5 0  04A0           OC     /04A0                          88322160
 *                                                           88322170
 *                     INTERRUPT ROUTINE LEVEL 08            88322180
 *                                                           88322190
07B6 0  0000    PRI10 OC     0                               88322200
07B7 0  C00E           LO     REQ08    LEVEL 08 REQUEST TO    88322210
07B8 00 05000A78       STO L1 IN16V   REQUEST SEQUENCE MSG   88322220
07BA 0  7102           MOX    1 2                            88322230
07BB 0  73FF           MOX    3 -1                           88322240
07BC 0  7006           MOX    PR100    NOT LAST INTERRUPT    88322250
 *                                                           88322260
 *                     SERVICE THIS INTERRUPT                88322270
 *                                                           88322280
07BD 0  C008    PR101 LO     REQ08    LEVEL 08 TO LEVEL      88322290
07BE 00 06000A88       STO L2 IN17V   SRVCO SEQUENCE MSG     88322300
07C0 0  7202           MOX    2 2                            88322310
07C1 00 4CC007B6       8OSC I PRI10   BRANCH RESET           88322320
 *                                                           88322330
07C3 0  0804    PRI00 XIO    PR102    INTERRUPT FOR LVl 07   88322340
07C4 0  1000           NOP                                   88322350
07C5 0  70F7           MOX    PR101                          88322360
 *                                                           88322370
07C6 0  0A08    REQ08 OC     /0A08    08                     88322380
07C7 0  0000           OC     0                              88322390
 *                                                           88322400
07C8 0  0100    PR102 OC     /C100    INTRP 07 IOCC          88322410
07C9 0  04A0           OC     /04A0                          88322420
 *                                                           88322430
 *                     INTERRUPT ROUTINE LEVEL 09            88322440
```

INTERRUPT FUNCTION TEST

```
                                                            88322450
07CA 0  0000    PPI11 OC     0                               88322460
07C8 0  C00E           LO     REQ09    LEVEL 09 REQUEST TO    88322470
07CC 00 05000A78       STO L1 IN16V   REQUEST SEQUENCE MSG   88322480
07CE 0  7102           MOX    1 2                            88322490
07CF 0  73FF           MDX    3 -1                           88322500
07D0 0  7006           MOX    PRI10    NOT LAST INTERRUPT    88322510
 *                                                           88322520
 *                     SERVICE THIS INTERRUPT                88322530
 *                                                           88322540
07D1 0  C008    PR111 LO     REQ09    LEVEL 09 TO LEVEL      88322550
07D2 00 06000A88       STO L2 IN17V   SRVCD SEQUENCE MSG     88322560
07D4 0  7202           MOX    2 2                            88322570
07D5 00 4CC007C4       8OSC I PRI11   BRANCH RESET           88322580
 *                                                           88322590
07D7 0  0804    PRI10 XIO    PR112    INTERRUPT FOR LVL 08   88322600
07D8 0  1000           NOP                                   88322610
07D9 0  70F7           MOX    PRI11                          88322620
 *                                                           88322630
07DA 0  0A09    REQ09 OC     /0A09    09                     88322640
07DB 0  0000           OC     0                              88322650
 *                                                           88322660
07DC 0  0080    PR112 OC     /0080    INTRP 08 IOCC          88322670
07DD 0  04A0           OC     /04A0                          88322680
 *                                                           88322690
 *                     INTERRUPT ROUTINE LEVEL 10            88322700
 *                                                           88322710
07DE 0  0000    PRI12 OC     0                               88322720
07DF 0  C00E           LO     REQ10    LEVEL 10 REQUEST TO    88322730
07E0 00 05000A78       STO L1 IN16V   REQUEST SEQUENCE MSG   88322740
07E2 0  7102           MOX    1 2                            88322750
07E3 0  73FF           MOX    3 -1                           88322760
07E4 0  7006           MOX    PR120    NOT LAST INTERRUPT    88322770
 *                                                           88322780
 *                     SERVICE THIS INTERRUPT                88322790
 *                                                           88322800
07E5 0  C008    PR121 LO     REQ10    LEVEL    TO LEVEL      88322810
07E6 00 06000AB8       STO L2 IN17V   SRVCO SEQUENCE MSG     88322820
07E8 0  7202           MOX    2 2                            88322830
07E9 00 4CC007DE       8OSC I PRI12   BRANCH RESET           88322840
 *                                                           88322850
07EB 0  0804    PR120 XIO    PR122    INTERRUPT FOR LVL 09   88322860
07EC 0  1000           NOP                                   88322870
07E0 0  70F7           MOX    PR121                          88322880
 *                                                           88322890
07EE 0  010A    REQ10 OC     /010A    10                     88322900
07EF 0  0000           OC     0                              88322910
 *                                                           88322920
07F0 0  0040    PR122 OC     /0040    INTRP 09 IOCC          88322930
07F1 0  04A0           OC     /04A0                          88322940
 *                                                           88322950
 *                     INTERRUPT ROUTINE LEVEL 11            88322960
 *                                                           88322970
07F2 0  0000    PRI13 OC     0                               88322980
07F3 0  C00E           LO     REQ11    LEVEL 11 REQUEST TO    88322990
07F4 00 05000A78       STO L1 IN16V   REQUEST SEQUENCE MSG   88323000
07F6 0  7102           MOX    1 2                            88323020
07F7 0  73FF           MOX    3 -1                           88323020
07F8 0  7006           MOX    PR130    NOT LAST INTERRUPT    88323030
 *                                                           88323040
 *                     SERVICE THIS INTERRUPT                88323050
 *                                                           88323060
07F9 0  C008    PR131 LO     REQ11    LEVEL 11 TO LEVEL      88323070
07FA 00 06000AB8       STO L2 IN17V   SRVCO SEQUENCE MSG     88323080
07FC 0  7202           MDX    2 2                            88323090
07FD 00 4CC007F2       8OSC 1 PRI13   BRANCH RESET           88323100
 *                                                           88323110
07FF 0  0804    PR130 XIO    PR132    INTERRUPT FOR LVL 10   88323120
```

INTERRUPT FUNCTION TEST

```
0800 0  1000           NOP                                          88323130
0801 0  70F7           MOX      PR131                               88323140
                *                                                   88323150
0802 0  0101   REQ11 DC         /0101        11                     88323160
0803 0  0000           OC       0                                   88323170
                *                                                   88323180
0804 0  0020   PR132 OC          /0020       INTRP 10 IOCC          88323190
0805 0  04A0           DC       /04A0                               88323200
                *                                                   88323210
                *              INTERRUPT ROUTINE LEVEL 12           88323220
                *                                                   88323230
                *                                                   88323240
0806 0  0000   PRI14 DC         0                                   88323250
0807 0  C00E           LD       REQ12        LEVEL 12 REQUEST TO    88323260
0808 00 05000A78       STO    L1 IN16V       REQUEST SEQUENCE MSG   88323270
080A 0  7102           MOX      1 2                                 88323280
080B 0  73FF           MOX      3 -1                                88323290
080C 0  7006           MDX      PR140        NOT LAST INTERRUPT     88323300
                *                                                   88323310
                *              SERVICE THIS INTERRUPT               88323320
                *                                                   88323330
PR141 LD         REQ12        LEVEL 12 TO LEVEL                     88323340
080D 0  C008                                                        
080E 00 06000AB8       STO    L2 IN17V       SRVCD SEQUENCE MSG     88323350
0810 0  7202           MOX      2 2                                 88323360
0811 00 4CC00806       BOSC   I PRI14        BRANCH RESET           88323370
                *                                                   88323380
0813 0  0804   PR140 XIO        PR142        INTERRUPT FOR LVL 11   88323390
0814 0  1000           NOP                                          88323400
0815 0  70F7           MOX      PR141                               88323410
                *                                                   88323420
0816 0  0102   REQ12 OC         /0102        12                     88323430
0817 0  0000           OC       0                                   88323440
                *                                                   88323450
0818 0  0010   PR142 OC         /0010        INTRP 11 IOCC          88323460
0819 0  04A0           DC       /04A0                               88323470
                *                                                   88323480
                *              INTERRUPT ROUTINE LEVEL 13           88323490
                *                                                   88323500
081A 0  0000   PRI15 DC         0                                   88323510
081B 0  C00E           LD       REQ13        LEVEL 13 REQUEST TO    88323520
081C 00 D5000A78       STO    L1 IN16V       REQUEST SEQUENCE MSG   88323530
081E 0  7102           MDX      1 2                                 88323540
081F 0  73FF           MDX      3 -1                                88323550
0820 0  7006           MDX      PR150        NOT LAST INTERRUPT     88323560
                *                                                   88323570
                *              SERVICE THIS INTERRUPT               88323580
                *                                                   88323590
0821 0  C008   PR151 LD         REQ13        LEVEL 13 TO LEVEL      88323600
0822 00 06000AB8       STO    L2 IN17V       SRVCD SEQUENCE MSG     88323610
0824 0  7202           MDX      2 2                                 88323620
0825 00 4CC0081A       BCSC   I PRI15        BRANCH RESET           88323630
                *                                                   88323640
0827 0  0804   PR150 XIO        PR152        INTERRUPT FOR LVL 12   88323650
0828 0  1000           NOP                                          88323660
0829 0  70F7           MDX      PR151                               88323670
                *                                                   88323680
082A 0  0103   REQ13 OC         /0103        13                     88323690
082B 0  0000           OC       0                                   88323700
                *                                                   88323710
082C 0  C008   PR152 OC         /0008        INTRP 12 IOCC          88323720
082D 0  04A0           OC       /04A0                               88323730
                *                                                   88323740
                *              INTERRUPT ROUTINE LEVEL 14           88323750
                *                                                   88323760
082E 0  0000   PRI16 OC         0                                   88323770
082F 0  C00E           LD       REQ14        LEVEL 14 REQUEST TO    88323780
0830 00 05000A78       STO    L1 IN16V       REQUEST SEQUENCE MSG   88323790
0832 0  7102           MDX      1 2                                 88323800
0833 0  73FF           MOX      3 -1
```

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0834 0  7006           MOX      PR160        NOT LAST INTERRUPT     88323810
                *                                                   88323820
                *              SERVICE THIS INTERRUPT               88323830
                *                                                   88323840
                *                                                   88323850
0835 0  C008   PR161 LD         REQ14        LEVEL 14 TO LEVEL      88323860
0836 00 D6000AB8       STO    L2 IN17V       SRVCO SEQUENCE MSG     88323870
0838 0  7202           MOX      2 2                                 88323880
0839 00 4CC0082E       BOSC   I PRI16        BRANCH RESET           88323890
                *                                                   88323900
083B 0  0804   PR160 XIO        PR162        INTERRUPT FOR LVL 13   88323910
083C 0  1000           NOP                                          88323920
083D 0  70F7           MDX      PR161                               88323930
                *                                                   88323940
083E 0  0104   REQ14 OC         /0104        14                     88323950
083F 0  0000           DC       0                                   88323960
                *                                                   88323970
0840 0  0004   PR162 OC         /0004        INTRP 13 IOCC          88323980
0841 0  04A0           OC       /J4A0                               88323990
                *                                                   88324000
                *              INTERRUPT ROUTINE LEVEL 15           88324010
                *                                                   88324020
0842 0  0000   PRI17 DC         0                                   88324030
0843 0  C00E           LD       REQ15        LEVEL 15 REQUEST TO    88324040
0844 00 05000A78       STO    L1 IN16V       REQUEST SEQUENCE MSG   88324050
0846 0  7102           MOX      1 2                                 88324060
0847 0  73FF           MOX      3 -1                                88324070
0848 0  7006           MOX      PR170        NOT LAST INTERRUPT     88324080
                *                                                   88324090
                *              SERVICE THIS INTERRUPT               88324100
                *                                                   88324110
0849 0  C008   PR171 LD         REQ15        LEVEL 15 TO LEVEL      88324120
084A 00 D6000A88       STO    L2 IN17V       SRVCD SEQUENCE MSG     88324130
084C 0  7202           MOX      2 2                                 88324140
084D 00 4CC00842       BOSC   I PRI17        BRANCH RESET           88324150
                *                                                   88324160
084F 0  0804   PR170 XIO        PR172        INTERRUPT FOR LVL 14   88324170
0850 0  1000           NOP                                          88324180
0851 0  70F7           MDX      PR171                               88324190
                *                                                   88324200
0852 0  0105   REQ15 OC         /0105        15                     88324210
0853 0  0000           DC       0                                   88324220
                *                                                   88324230
0854 0  8000   PR172 DC         /8000        INTERP 14 IOCC         88324240
0855 0  04A1           OC       /04A1                               88324250
                *                                                   88324260
                *              INTERRUPT ROUTINE LEVEL 16           88324270
                *                                                   88324280
0856 0  0000   PRI18 OC         0                                   88324290
0857 0  C00E           LD       REQ16        LEVEL 16 REQUEST TO    88324300
0858 00 D5000A78       STO    L1 IN16V       REQUEST SEQUENCE MSG   88324310
085A 0  7102           MDX      1 2                                 88324320
085B 0  73FF           MDX      3 -1                                88324330
085C 0  7006           MDX      PR180        NOT LAST INTERRUPT     88324340
                *                                                   88324350
                *              SERVICE THIS INTERRUPT               88324360
                *                                                   88324370
085D 0  C008   PR181 LD         REQ16        LEVEL 16 TO LEVEL      88324380
085E 00 D6000A88       STO    L2 IN17V       SRVCO SEQUENCE MSG     88324390
0860 0  7202           MDX      2 2                                 88324400
0861 00 4CC00856       BOSC   I PRI18        BRANCH RESET           88324410
                *                                                   88324420
0863 0  0804   PR180 XIO        PR182        INTERRUPT FOR LVL 15   88324430
0864 0  1000           NOP                                          88324440
0865 0  70F7           MDX      PR181                               88324450
                *                                                   88324460
0866 0  0106   REQ16 OC         /0106        16                     88324470
0867 0  0000           OC       0                                   88324480
                *
```

INTERRUPT FUNCTION TEST

```
0868 0  4003      PR182 OC    /4000      INTRP 15 IOCC      88324490
0869 0  04A1            OC    /04A1                         88324500
                    *                                       88324510
                    *              INTERRUPT ROUTINE LEVEL 17  88324520
                    *                                       88324530
086A 0  0000      PRI19 OC    0                             88324540
0868 0  C00E            LO    REQ17      LEVEL 17 REQUEST TO 88324550
086C 00 05000A7B        STO   L1 IN16V   REQUEST SEQUENCE MSG 88324560
086E 0  7102            MOX   1 2                           88324570
086F 0  73FF            MOX   3 -1                          88324580
0870 0  7006            MOX   PR190      NOT LAST INTERRUPT  88324590
                    *                                       88324600
                    *              SERVICE THIS INTERRUPT    88324610
                    *                                       88324620
0871 0  C008      PR191 LO    REQ17      LEVEL 17 TO LEVEL   88324630
0872 00 06000AB8        STO   L2 IN17V   SRVCO SEQUENCE MSG  88324640
0874 0  7202            MOX   2 2                            88324650
0875 00 4CC0086A        BOSC  I PRI19    BRANCH RESET        88324660
                    *                                       88324670
0877 0  0804      PR190 XIO   PRI92      INTERRUPT FOR LVL 16 88324680
0878 0  1000            NOP                                  88324690
0879 0  70F7            MOX   PRI91                          88324700
                    *                                       88324710
087A 0  0107      REQ17 OC    /0107      17                  88324720
087B 0  0000            OC    0                              88324730
                    *                                       88324740
087C 0  2000      PR192 OC    /2000      INTRP 16 IOCC       88324750
087D 0  04A1            OC    /04A1                           88324760
                    *                                       88324770
                    *              INTERRUPT ROUTINE LEVEL 18  88324780
                    *                                       88324790
087E 0  0000      PRI20 OC    0                             88324800
087F 0  C00E            LO    REQ18      LEVEL 18 REQUEST TO 88324810
0880 00 05000A78        STO   L1 IN16V   REQUEST SEQUENCE MSG 88324820
0882 0  7102            MOX   1 2                           88324830
0883 0  73FF            MOX   3 -1                           88324840
0884 0  7006            MOX   PR200      NOT LAST INTERRUPT  88324850
                    *                                       88324860
                    *              SERVICE THIS INTERRUPT    88324870
                    *                                       88324880
0885 0  C008      PR201 LO    REQ18      LEVEL 18 TO LEVEL   88324890
0886 00 06000AB8        STO   L2 IN17V   SRVCO SEQUENCE MSG  88324900
0888 0  7202            MOX   2 2                            88324910
0889 00 4CC0087E        BOSC  I PRI20    BRANCH RESET        88324920
                    *                                       88324930
088B 0  0804      PR200 XIO   PP202      INTERRUPT FOR LVL 17 88324940
088C 0  1000            NOP                                  88324950
088D 0  70F7            MOX   PR201                          88324960
                    *                                       88324970
088E 0  0108      REQ18 OC    /0108      18                  88324980
088F 0  0000            OC    0                              88324990
                    *                                       88325000
0890 0  1000      PR202 OC    /1000      INTRP 17 IOCC       88325010
0891 0  04A1            OC    /04A1                           88325020
                    *                                       88325030
                    *              INTERRUPT ROUTINE LEVEL 19  88325040
                    *                                       88325050
0892 0  0000      PRI21 OC    0                             88325060
0893 0  C00E            LO    REQI9      LEVEL 19 REQUEST TO 88325070
0894 00 05000A78        STO   L1 IN16V   REQUEST SEQUENCE MSG 88325080
0896 0  7102            MOX   1 2                           88325090
0897 0  73FF            MOX   3 -1                           88325100
0898 0  7006            MOX   PR210      NOT LAST INTERRUPT  88325110
                    *                                       88325120
                    *              SERVICE THIS INTERRUPT    88325130
                    *                                       88325140
0899 0  C008      PR211 LO    REQ19      LEVEL 19 TO LEVEL   88325150
089A 00 06000A88        STO   L2 IN17V   SRVCO SEQUENCE MSG  88325160
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INTERRUPT FUNCTION TEST

```
089C 0  7202            MOX   2 2                            88325170
089D 00 4CC00892        BOSC  I PRI21    BRANCH RESET        88325180
                    *                                       88325190
089F 0  0804      PR210 XIO   PR212      INTERRUPT FOR LVL 18 88325200
08A0 0  1000            NOP                                  88325210
08A1 0  70F7            MOX   PR211                          88325220
                    *                                       88325230
08A2 0  0109      REQ19 OC    /0109      19                  88325240
08A3 0  0000            OC    0                              88325250
                    *                                       88325260
08A4 0  0800      PR212 OC    /0800      INTRP 18 IOCC       88325270
08A5 0  04A1            OC    /04A1                           88325280
                    *                                       88325290
                    *              INTERRUPT ROUTINE LEVEL 20  88325300
                    *                                       88325310
08A6 0  0000      PRI22 OC    0                             88325320
08A7 0  C00E            LO    REQ20      LEVEL 20 REQUEST TO 88325330
08A8 00 05000A78        STO   L1 IN16V   REQUEST SEQUENCE MSG 88325340
08AA 0  7102            MOX   1 2                           88325350
08AB 0  73FF            MOX   3 -1                           88325360
08AC 0  7006            MOX   PR220      NOT LAST INTERRUPT  88325370
                    *                                       88325380
                    *              SERVICE THIS INTERRUPT    88325390
                    *                                       88325400
08AD 0  C008      PR221 LO    REQ20      LEVEL 20 TO LEVEL   88325410
08AE 00 06000A8b        STO   L2 IN17V   SRVCO SEQUENCE MSG  88325420
08B0 0  7202            MOX   2 2                            88325430
08B1 00 4CC008A6        BOSC  I PRI22    BRANCH RESET        88325440
                    *                                       88325450
08B3 0  0804      PR220 XIO   PR222      INTERRUPT FOR LVL 19 88325460
08B4 0  1000            NOP                                  88325470
08B5 0  70F7            MOX   PR221                          88325480
                    *                                       88325490
08B6 0  020A      REQ20 OC    /020A      20                  88325500
08B7 0  0000            OC    0                              88325510
                    *                                       88325520
08B8 0  0400      PR222 OC    /0400      INTRP 19 IOCC       88325530
08B9 0  04A1            OC    /04A1                           88325540
                    *                                       88325550
                    *              INTERRUPT ROUTINE LEVEL 21  88325560
                    *                                       88325570
08BA 0  0000      PRI23 OC    0                             88325580
08BB 0  C00E            LO    REQ21      LEVEL 21 REQUEST TO 88325590
08BC 00 05000A78        STO   L1 IN16V   REQUEST SEQUENCE MSG 88325600
08BE 0  7102            MOX   1 2                           88325610
08BF 0  73FF            MOX   3 -1                           88325620
08C0 0  7006            MOX   PR230      NOT LAST INTERRUPT  88325630
                    *                                       88325640
                    *              SERVICE THIS INTERRUPT    88325650
                    *                                       88325660
08C1 0  C008      PR231 LO    REQ21      LEVEL 21 TO LEVEL   88325670
08C2 00 06000AB8        STO   L2 IN17V   SRVCO SEQUENCE MSG  88325680
08C4 0  7202            MOX   2 2                            88325690
08C5 00 4CC0088A        BOSC  I PRI23    BRANCH RESET        88325700
                    *                                       88325710
08C7 0  0804      PR230 XIO   PR232      INTERRUPT FOR LVL 20 88325720
08C8 0  1000            NOP                                  88325730
08C9 0  70F7            MOX   PR231                          88325740
                    *                                       88325750
08CA 0  0201      REQ21 OC    /0201      21                  88325760
08CB 0  0000            OC    0                              88325770
                    *                                       88325780
08CC 0  0200      PR232 OC    /0200      INTRP 20 IOCC       88325790
08CD 0  04A1            OC    /04A1                           88325800
                    *                                       88325810
                    *              INTERRUPT ROUTINE LEVEL 22  88325820
                    *                                       88325830
08CE 0  0000      PRI24 OC    0                             88325840
```

INTERRUPT FUNCTION TEST

```
08CF 0  C00E          LD      REQ22       LEVEL 22 REQUEST TO      BB325B50
0800 00 05000A78      STO  L1 IN16V       REQUEST SEQUENCE MSG     BB325B60
08C2 0  7102          MOX     1 2                                  BB32587D
0803 0  73FF          MDX     3 -1                                 BB325880
0804 0  7006          MOX     PR240       NOT LAST INTERRUPT       BB325890
                      *                                            BB325900
                      *                 SERVICE THIS INTERRUPT     BB325910
                      *                                            BB325920
0805 D  C008   PR241  LO      REQ22       LEVEL 22 TO LEVEL        BB325930
0806 00 06000ABB      STO  L2 IN17V       SRVCO SEQUENCE MSG       BB325940
080B 0  7202          MOX     2 2                                  BB325950
0809 00 4CC008CE      BOSC I  PRI24       BRANCH RESET             BB325960
                      *                                            BB325970
080B 0  0804   PR240  XIO     PR242       INTERRUPT FOR LVL 21     BB3259B0
080C 0  1000          NOP                                          BB32599D
0BDD 0  70F7          MOX     PR241                                BB326000
                      *                                            BB326010
080E 0  0202   REQ22  OC      /0202       22                       BB32602D
080F D  0000          DC      0                                    BB326030
                      *                                            BB32604D
08E0 0  D100   PR242  OC      /01C0       INTRP 21 IOCC            BB326050
0BE1 0  04A1          OC      /04A1                                BB32606D
                      *                                            BB32607D
                      *                 INTERRUPT ROUTINE LEVEL 23 BB326080
                      *                                            BB32609D
08E2 D  0000   PRI25  DC      0                                    BB326100
0BE3 D  C00E          LD      REQ23       LEVEL 23 REQUEST TO      BB32611D
0BE4 DO D5000A78      STO  L1 IN16V       REQUEST SEQUENCE MSG     BB32612D
0BE6 0  7102          MDX     1 2                                  BB32613D
0BE7 D  73FF          MOX     3 -1                                 BB326140
0BE8 0  7006          MOX     PR250       NOT LAST INTERRUPT       BB326150
                      *                                            BB326160
                      *                 SERVICE THIS INTERRUPT     BB326170
                      *                                            BB32618D
08E9 0  C008   PR251  LD      REQ23       LEVEL 23 TO LEVEL        BB32619D
08EA 00 D6000ABB      STO  L2 IN17V       SRVCD SEQUENCE MSG       BB326200
08EC 0  7202          MDX     2 2                                  BB326210
08E0 00 4CC008E2      BOSC I  PRI25       BRANCH RESET             BB326220
                      *                                            BB326230
0BEF 0  0804   PR250  XIO     PR252       INTERRUPT FOR LVL 22     BB326240
0BF0 0  1000          NOP                                          BB326250
08F1 D  70F7          MOX     PR251                                BB32626D
                      *                                            BB32627D
0BF2 0  0203   REQ23  OC      /D2D3       23                       BB32628D
0BF3 D  000D          OC      0                                    BB32629D
                      *                                            BB326300
0BF4 0  0080   PR252  DC      /D08D       INTRP 22 IOCC            BB326310
08F5 D  04A1          OC      /04A1                                B9326320
                      *                                            BB326330
                      *                                            BB32634D
                      *                 ROUTINE SIX TRACE INTRPT   BB326350
                      *                                            BB32636D
0BF6 D  0000   TRACE  DC      0                            SE      BB326370
0BF7 0  002B          STO     TRCN2       SAVE ACCUMULATOR         BB32638D
0BFB 00 74FF0BF6      MDX  L  TRACE,-1                             BB326390
0BFA 0  COFB          LD      TRACE       GET INTERP I COUNT       BB326400
08FB 0  9025          S       TRCNO       CK IF INSTR TO TRACE     BB326410
0BFC 00 4C280903      BSC  L  TRAC0,+Z    BRANCH IF TRACING        BB326420
08FE 00 740108F6      MOX  L  TRACE,1     RESTORE RETURN           BB32643D
0900 D  C022          LO      TRCN2       RESTORE ACCUMULATOR      BB32644D
0901 00 4CB00BF6      BSC  I  TRACE       GO COMPLETE CNTRL OP     BB326450
                      *                                            BB326460
0903 00 C6000930 TRACO LD  L2 INLVT+2     SET EXPECTED INSTRN      BB32647D
0905 G0 D4000B1C      STO  L  INM19+23    NO. IN ERROR MESSAGE     BB326480
                      *                                            BB326490
0907 0  COEE          LD      TRACE       GET INTERP I COUNT       BB326500
0908 00 96000924      S    L2 *NSAD       COMPR WITH EXPECTED      BB326510
090A DO 4C200914      BSC  L  TRAC1,Z     BRANCH IF WRONG 1STR     BB326520
```

```
                      *                                            BB32653D
                      *                                            BB326540
090C 0  7201          MOX     2 1                                  BB326550
090D 00 740104BD      MOX  L  TRINO,1     STEP TRACE INOICATOR     BB326550
090F 00 740108F6      MDX  L  TRACE,1     RESTOPE RETURN           BB326560
0911 0  C011          LO      TRCN2       RESTORE ACCUMULATOR      BB326570
0912 00 4CC008F6 TRAC2 BOSC I TRACE       EXIT               SX    BB326580
                      *                                            BB326590
0914 0  6A0D   TRAC1  STX   2 TRCN1                                BB326600
0915 D  B00C          A       TRCN1                                BB326610
0916 D  D00B          STO     TRCN1                                BB32662D
0917 00 65B00922      LOX  L  TRCN1       SET INOEX TO DIFRNCE     BB326630
0919 00 C5000930      LO   L1 INLVT+2     SET INTERRUPTING         BB326640
091B 00 D4000B20      STO  L  INM19+27    INSTR TO ERROR MSG       BB326650
                      *                                            BB326660
*****************************************************              BB32667D
091D 00 440004F9      BSI  L  ERALT       LOG FAILING TRACE   SRC  BB326680
091F D  DB05          OC      INM19       INSTRUCTION              BB326690
*****************************************************              BB326700
                      *                                            BB326710
0920 0  70E8          MOX     TPAC1-8                              BB326720
                      *                                            BB326730
0921 0  0467   TRCNO  OC      RT501                                BB32674D
0922 0  0000   TRCN1  OC      0                                    BB326750
0923 0  000D   TRCN2  OC      0                                    BB326760
                      *                                            BB32677D
                      *                 TRACE INSTRUCTION AODRESS  BB326780
                      *                                            BB326790
0924 D  045D   INSAD  OC      RT500                                BB32680D
0925 0  045E          OC      RT500+1                              BB326810
0926 0  045F          DC      RT500+2                              BB326820
0927 0  0460          DC      RT500+3                              BB326830
0928 0  0461          OC      RT500+4                              BB326840
0929 0  0462          OC      RT500+5                              BB32685D
092A 0  0463          DC      RT500+6                              BB326860
0928 0  0464          OC      RT500+7                              BB32687D
092C 0  0465          DC      RT500+8                              BB326880
0920 D  0466          DC      RT500+9                              BB326890
                      *                 HEX INTERRUPT LEVEL TABLE  BB3269DD
                      *                                            BB326910
092E 0  3529   INLVT  OC      /3529       ER                       BB32692D
092F 0  0A0A          DC      /0A0A       00                       BB326930
0930 0  0A01          DC      /0A01       01                       BB32694D
0931 D  0A02          OC      /0A02       D2                       BB326950
0932 0  0A03          DC      /0A03       03                       BB326960
0933 0  0A04          OC      /0A04       C4                       BB32697D
0934 0  0A05          OC      /3A05       05                       BB3269B0
0935 0  DA06          OC      /0A06       06                       BB3269DD
0936 0  DA07          OC      /0A07       D7                       BB327000
0937 0  DAD8          DC      /DAOB       0B                       BB327010
0938 D  AD9           OC      /0A09       D9                       BB327020
0939 0  01DA          OC      /D10A       1D                       BB327030
093A 0  01D1          OC      /0101       11                       BB3270D4
093B 0  0102          OC      /0102       12                       BB327D5D
093C D  0103          OC      /0103       13                       BB32706D
0930 0  0104          DC      /0104       14                       BB32707D
093E D  0105          OC      /D1D5       15                       BB327080
093F D  0106          DC      /0106       16                       BB32709D
0940 0  0107          OC      /01D7       17                       BB327100
0941 D  010B          OC      /010B       18                       BB32711D
0942 0  0109          OC      /0109       19                       BB32712D
0943 D  020A          OC      /D20A       20                       BB32713D
0944 0  0201          OC      /0201       21                       BB327140
0945 0  0202          DC      /0202       22                       BB32715D
0946 D  D203          DC      /0203       23                       BB327160
0947 0  1329          DC      /1329       TR                       BB327170
0948 D  3335          DC      /3335       CE                       BB327180
                      *                                            BB327190
                      *                 PRINT MESSAGES 1443 CODEO  BB327200
```

```
                        •                              88327210
0949 0  C013    INM01 DC    /0013    WORD COUNT        88327220
094A 0  330A          DC    /330A    CO                88327230
094B 0  0A01          DC    /0A01    01                88327240
094C 0  0000          DC    /0000    SPACE             88327250
094D 0  0000          DC    /0000    SPACE             88327260
094E 0  1314          DC    /1314    TU                88327270
094F 0  2925          DC    /2925    RN                88327280
0950 0  0034          DC    /0034    O                 88327290
0951 0  3912          DC    /3912    IS                88327300
0952 0  3132          DC    /3132    AB                88327310
0953 0  2335          DC    /2335    LE                88327320
0954 0  0012          DC    /0012    S                 88327330
0955 0  1600          DC    /1600    N                 88327340
0956 0  2625          DC    /2625    ON                88327350
0957 0  0027          DC    /0027    P                 88327360
0958 0  1412          DC    /1412    US                88327370
0959 0  3800          DC    /3800    H                 88327380
095A 0  1213          DC    /1213    ST                88327390
095B 0  3129          DC    /3129    AR                88327400
095C 0  1300          DC    /1300    T                 88327410
095D 0  FFFF          DC    /FFFF    TERM              88327420
                        •                              88327430
095E 0  000E    INM02 DC    /000E    WORD COUNT        88327440
095F 0  330A          DC    /330A    CO                88327450
0960 0  0A02          DC    /0A02    02                88327460
0961 0  0000          DC    /0000    SPACE             88327470
0962 0  0000          DC    /0000    SPACE             88327480
0963 0  1314          DC    /1314    TU                88327490
0964 0  2925          DC    /2925    RN                88327500
0965 0  0034          DC    /0034    D                 88327510
0966 0  3912          DC    /3912    IS                88327520
0967 0  3132          DC    /3132    AB                88327530
0968 0  2335          DC    /2335    LE                88327540
0969 0  0012          DC    /0012    S                 88327550
096A 0  1600          DC    /1600    N                 88327560
096B 0  2636          DC    /2636    OF                88327570
096C 0  3600          DC    /3600    F                 88327580
096D 0  FFFF          DC    /FFFF    TERM              88327590
                        •                              88327600
096E 0  0013    INM03 DC    /0013    WORD COUNT        88327610
096F 0  350A          DC    /350A    EO                88327620
0970 0  0A01          DC    /0A01    01                88327630
0971 0  0000          DC    /0000    SPACE             88327640
0972 0  0000          DC    /0000    SPACE             88327650
0973 0  2913          DC    /2913    RT                88327660
0974 0  2500          DC    /2500    N                 88327670
0975 0  0000          DC    /0000    ROUTINE NUMBER    88327680
0976 0  0023          DC    /0023    L                 88327690
0977 0  3515          DC    /3515    EV                88327700
0978 0  2300          DC    /2300    L                 88327710
0979 0  0000          DC    /0000    LEVEL NUMBER      88327720
097A 0  0036          DC    /0036    F                 88327730
097B 0  3139          DC    /3139    AI                88327740
097C 0  2335          DC    /2335    LE                88327750
097D 0  3400          DC    /3400    D                 88327760
097E 0  1326          DC    /1326    TO                88327770
097F 0  0039          DC    /0039    I                 88327780
0980 0  2513          DC    /2513    NT                88327790
0981 0  2927          DC    /2927    RP                88327800
0982 0  FFFF          DC    /FFFF    TERM              88327810
                        •                              88327820
0983 0  0015    INM04 DC    /0015    WORD COUNT        88327830
0984 0  350A          DC    /350A    EO                88327840
0985 0  0A02          DC    /0A02    02                88327850
0986 0  0000          DC    /0000    SPACE             88327860
0987 0  0000          DC    /0000    SPACE             88327870
0988 0  2913          DC    /2913    RT                88327880
```

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0989 0  2500          DC    /2500    N                 88327890
098A 0  0000          DC    /0000    ROUTINE NUMBER    88327900
098B 0  0029          DC    /0029    R                 88327910
098C 0  3528          DC    /3528    EQ                88327920
098D 0  0000          DC    /0000    BLANK             88327930
098E 0  0000          DC    /0000    REQUEST NUMBER    88327940
098F 0  0037          DC    /0037    G                 88327950
0990 0  3915          DC    /3915    IV                88327960
0991 0  3525          DC    /3525    EN                88327970
0992 0  0023          DC    /0023    L                 88327980
0993 0  3515          DC    /3515    EV                88327990
0994 0  2300          DC    /2300    L                 88328000
0995 0  0000          DC    /0000    LEVEL NUMBER      88328010
0996 0  0012          DC    /0012    S                 88328020
0997 0  2915          DC    /2915    RV                88328030
0998 0  3334          DC    /3334    CD                88328040
0999 0  FFFF          DC    /FFFF    TERM              88328050
                        •                              88328060
099A 0  0018    INM05 DC    /0018    WORD COUNT        88328070
099B 0  350A          DC    /350A    EO                88328080
099C 0  0A03          DC    /0A03    03                88328090
099D 0  0000          DC    /0000    SPACE             88328100
099E 0  0000          DC    /0000    SPACE             88328110
099F 0  2913          DC    /2913    RT                88328120
09A0 0  2500          DC    /2500    N                 88328130
09A1 0  0000          DC    /0000    ROUTINE NUMBER    88328140
09A2 0  0029          DC    /0029    R                 88328150
09A3 0  3528          DC    /3528    EQ                88328160
09A4 0  0000          DC    /0000    BLANK             88328170
09A5 0  0000          DC    /0000    REQUEST NUMBER    88328180
09A6 0  0039          DC    /0039    I                 88328190
09A7 0  2513          DC    /2513    NT                88328200
09A8 0  2927          DC    /2927    RP                88328210
09A9 0  3400          DC    /3400    D                 88328220
09AA 0  1639          DC    /1639    WI                88328230
09AB 0  1338          DC    /1338    TH                88328240
09AC 0  0034          DC    /0034    O                 88328250
09AD 0  3912          DC    /3912    IS                88328260
09AE 0  3132          DC    /3132    AB                88328270
09AF 0  2335          DC    /2335    LE                88328280
09B0 0  0012          DC    /0012    S                 88328290
09B1 0  1600          DC    /1600    N                 88328300
09B2 0  2625          DC    /2625    ON                88328310
09B3 0  FFFF          DC    /FFFF    TERM              88328320
                        •                              88328330
09B4 0  0013    INM06 DC    /C013    WORD COUNT        88328340
09B5 0  350A          DC    /350A    EO                88328350
09B6 0  0A04          DC    /0A04    04                88328360
09B7 0  0000          DC    /0000    SPACE             88328370
09B8 0  0000          DC    /0000    SPACE             88328380
09B9 0  2913          DC    /2913    RT                88328390
09BA 0  2500          DC    /2500    N                 88328400
09BB 0  0000          DC    /0000    ROUTINE NUMBER    88328410
09BC 0  0016          DC    /0016    W                 88328420
09BD 0  2926          DC    /2926    RO                88328430
09BE 0  2537          DC    /2537    NG                88328440
09BF 0  0039          DC    /0039    I                 88328450
09C0 0  2312          DC    /2312    LS                88328460
09C1 0  1600          DC    /1600    N                 88328470
09C2 0  2625          DC    /2625    ON                88328480
09C3 0  0035          DC    /0035    E                 88328490
09C4 0  2929          DC    /2929    RR                88328500
09C5 0  0039          DC    /0039    I                 88328510
09C6 0  2513          DC    /2513    NT                88328520
09C7 0  2927          DC    /2927    RP                88328530
09C8 0  FFFF          DC    /FFFF    TERM              88328540
                        •                              88328550
09C9 0  000C    INM07 DC    /000C    WORD COUNT        88328560
```

INTERRUPT FUNCTION TEST

```
09CA 0  310A        OC  /310A  AO          8B328570
09CB 0  0A01        OC  /0A01  01          8B328580
09CC 0  0000        OC  /0000  SPACE       8B328590
09CD C  0000        OC  /0000  SPACE       8B328600
09CE 0  2729        OC  /2729  PR          8B328610
09CF 0  2637        DC  /2637  OG          8B328620
0900 0  2931        OC  /2931  RA          8B328630
0901 0  2400        OC  /2400  M           8B328640
0902 0  3326        OC  /3326  CO          8B328650
0903 0  2427        OC  /2427  MP          8B328660
0904 0  2335        OC  /2335  LE          8B328670
0905 0  1335        OC  /1335  TE          8B328680
0906 0  FFFF        OC  /FFFF  TERM        8B328690
                                           8B328700
0907 0  000E  INM08 OC  /000E  WORO COUNT  8B328710
0908 0  330A        OC  /330A  CO          8B328720
0909 0  0A03        OC  /0A03  03          8B328730
090A 0  0000        OC  /0000  SPACE       8B328740
090B 0  0000        OC  /0000  SPACE       8B328750
090C 0  2714        OC  /2714  PU          8B328760
090D 0  1238        OC  /1238  SH          8B328770
090E 0  0033        OC  /0033  C           8B328780
090F 0  3500        DC  /3500  E           8B328790
09E0 0  3925        OC  /3925  IN          8B328800
09E1 0  1329        OC  /1329  TR          8B328810
09E2 0  2700        OC  /2700  P           8B328820
09E3 0  3214        OC  /3214  BU          8B328830
09E4 0  1313        OC  /1313  TT          8B328840
09E5 0  2625        DC  /2625  ON          8B328850
09E6 0  FFFF        OC  /FFFF  TERM        8B328860
                                           8B328870
09E7 0  000F  INM09 OC  /000F  WORD COUNT  8B328880
09E8 0  330A        OC  /330A  CO          8B328890
09E9 0  0A04        OC  /0A04  04          8B328900
09EA 0  0000        OC  /0000  SPACE       8B328910
09EB 0  0000        OC  /0000  SPACE       8B328920
09EC 0  2714        OC  /2714  PU          8B328930
09E0 0  1238        OC  /1238  SH          8B328940
09EE 0  0033        OC  /0033  C           8B328950
09EF 0  2625        OC  /2625  ON          8B328960
09F0 0  1200        OC  /1200  S           8B328970
09F1 0  3925        OC  /3925  IN          8B328980
09F2 0  1329        OC  /1329  TR          8B328990
09F3 0  2700        OC  /2700  P           8B329000
09F4 0  3214        OC  /3214  BU          8B329010
09F5 0  1313        OC  /1313  TT          8B329020
09F6 0  2625        OC  /2625  ON          8B329030
09F7 0  FFFF        OC  /FFFF  TERM        8B329040
                                           8B329050
09F8 0  0011  INM10 OC  /0011  WORO COUNT  8B329060
09F9 0  330A        OC  /330A  CO          8B329070
09FA 0  0A05        OC  /0A05  05          8B329080
09FB 0  0000        OC  /0000  SPACE       8B329090
09FC 0  0000        OC  /0000  SPACE       8B329100
09FD 0  1235        OC  /1235  SE          8B329110
09FE 0  1300        OC  /1300  T           8B329120
09FF 0  1329        OC  /1329  TR          8B329130
0A00 0  3133        OC  /3133  AC          8B329140
0A01 0  3500        OC  /3500  E           8B329150
0A02 0  2426        OC  /2426  MO          8B329160
0A03 0  3435        OC  /3435  OE          8B329170
0A04 0  0000        OC  /0000  BLANK       8B329180
0A05 0  2714        OC  /2714  PU          8B329190
0A06 0  1238        OC  /1238  SH          8B329200
0A07 0  C012        OC  /0012  S           8B329210
0A08 0  1331        OC  /1331  TA          8B329220
0A09 0  2913        OC  /2913  RT          8B329230
0A0A 0  FFFF        OC  /FFFF  TERM        8B329240
```

INTERRUPT FUNCTION TEST

```
                                           8B329250
0A0B 0  0010  INM11 OC  /0010  WORD COUNT  8B329260
0A0C 0  330A        OC  /330A  CO          8B329270
0A00 0  0A06        OC  /0A06  06          8B329280
0A0E 0  0000        OC  /0000  SPACE       8B329290
0A0F 0  0000        OC  /0000  SPACE       8B329300
0A10 0  1235        OC  /1235  SE          8B329310
0A11 0  1300        OC  /1300  T           8B329320
0A12 0  2914        OC  /2914  RU          8B329330
0A13 0  2500        OC  /2500  N           8B329340
0A14 0  2426        OC  /2426  MO          8B329350
0A15 0  3435        OC  /3435  OE          8B329360
0A16 0  0000        OC  /0000  BLANK       8B329370
0A17 0  2714        DC  /2714  PU          8B329380
0A18 0  1238        OC  /1238  SH          8B329390
0A19 0  0012        OC  /0012  S           8B329400
0A1A 0  1331        OC  /1331  TA          8B329410
0A1B 0  2913        OC  /2913  RT          8B329420
0A1C 0  FFFF        OC  /FFFF  TERM        8B329430
                                           8B329440
0A1D 0  000F  INM12 OC  /000F  WORO COUNT  8B329450
0A1E 0  350A        OC  /350A  EO          8B329460
0A1F 0  0A05        OC  /0A05  05          8B329470
0A20 0  0000        OC  /0000  SPACE       8B329480
0A21 0  0000        OC  /0000  SPACE       8B329490
0A22 0  1235        OC  /1235  SE          8B329500
0A23 0  2814        OC  /2814  QU          8B329510
0A24 0  3525        OC  /3525  EN          8B329520
0A25 0  3335        DC  /3335  CE          8B329530
0A26 0  0035        OC  /0035  E           8B329540
0A27 0  2929        OC  /2929  RR          8B329550
0A28 0  2629        OC  /2629  OR          8B329560
0A29 0  0029        OC  /0029  R           8B329570
0A2A 0  1325        OC  /1325  TN          8B329580
0A2B 0  0000        OC  /0000  BLANK       8B329590
0A2C 0  0000        OC  /0000  ROUTINE NUMBER  8B329600
0A2D 0  FFFF        OC  /FFFF  TERM        8B329610
                                           8B329620
0A2E 0  0015  INM13 OC  /0015  WORD COUNT  8B329630
0A2F 0  350A        OC  /350A  EO          8B329640
0A30 0  0A06        OC  /0A06  06          8B329650
0A31 0  0000        OC  /0000  SPACE       8B329660
0A32 0  0000        OC  /0000  SPACE       8B329670
0A33 0  2913        OC  /2913  RT          8B329680
0A34 0  2500        OC  /2500  N           8B329690
0A35 0  0400        OC  /0400  4           8B329700
0A36 0  2335        OC  /2335  LE          8B329710
0A37 0  1535        OC  /1535  VE          8B329720
0A38 0  2300        DC  /2300  L           8B329730
0A39 0  0000        OC  /0000  REQUEST NUMBER  8B329740
0A3A 0  0039        OC  /0039  I           8B329750
0A3B 0  2513        OC  /2513  NT          8B329760
0A3C 0  2927        OC  /2927  RP          8B329770
0A3D 0  3400        OC  /3400  D           8B329780
0A3E 0  1638        OC  /1638  WH          8B329790
0A3F 0  3923        OC  /3923  IL          8B329800
0A40 0  3500        OC  /3500  E           8B329810
0A41 0  2431        OC  /2431  MA          8B329820
0A42 0  1222        OC  /1222  SK          8B329830
0A43 0  3534        DC  /3534  EO          8B329840
0A44 0  FFFF        OC  /FFFF  TERM        8B329850
                                           8B329860
0A45 0  0011  INM14 OC  /0011  WORO COUNT  8B329870
0A46 0  350A        OC  /350A  EO          8B329880
0A47 0  0A07        OC  /0A07  07          8B329890
0A48 0  0000        OC  /0000  SPACE       8B329900
0A49 0  0000        OC  /0000  SPACE       8B329910
0A4A 0  2913        OC  /2913  RT          8B329920
```

INTERRUPT FUNCTION TEST

```
0A4B 0  2500         DC    /2500    N              88329930
0A4C 0  0200         DC    /0200    2              88329940
0A4D 0  3925         OC    /3925    IN             88329950
0A4E 0  1300         DC    /1300    T              88329960
0A4F 0  0000         DC    /0000    LEVEL NUMBER   88329970
0A50 0  0039         OC    /0039    1              883299B0
0A51 0  2312         OC    /2312    LS             88329990
0A52 0  1600         OC    /1600    W              88330000
0A53 0  2526         OC    /2526    NO             88330010
0A54 0  1300         DC    /1300    T              88330020
0A55 0  1935         OC    /1935    ZE             88330030
0A56 0  2926         OC    /2926    RO             88330040
0A57 0  FFFF         DC    /FFFF    TERM           88330050
                *                                  88330060
0A58 0  000F  INM15  DC    /000F    WORD COUNT     88330070
0A59 0  340A         DC    /340A    DO             88330080
0A5A 0  0A01         DC    /0A01    01             88330090
0A5B 0  0000         DC    /0C00    SPACE          88330100
0A5C 0  0000         DC    /0C00    SPACE          88330110
0A5D 0  2913         DC    /2913    RT             88330120
0A5E 0  2500         DC    /2500    N              88330130
0A5F 0  0000         DC    /0000    ROUTINE NUMBER 88330140
0A60 0  0000         DC    /0000    BLANK          88330150
0A61 0  2729         DC    /2729    PR             88330160
0A62 0  3926         OC    /3926    IO             88330170
0A63 0  2939         DC    /2939    RI             88330180
0A64 0  1318         DC    /1318    TY             88330190
0A65 0  0033         DC    /0033    C              88330200
0A66 0  3835         DC    /3835    HE             88330210
0A67 0  3322         DC    /3322    CK             88330220
0A68 0  FFFF         DC    /FFFF    TERM           88330230
                *                                  88330240
0A6A 00 00000000     DEC   0                       88330250
0A6C 0  003E  INM16  DC    /003E    WORD COUNT     88330260
0A6D 0  0000         DC    /0000    SPACE          88330270
0A6E 0  0000         DC    /0000    SPACE          88330280
0A6F 0  0000         DC    /0000    SPACE          88330290
0A70 0  0000         DC    /0000    SPACE          88330300
0A71 0  2935         DC    /2935    RE             88330310
0A72 0  2800         DC    /2800    Q              88330320
0A73 0  1235         DC    /1235    SE             88330330
0A74 0  2814         DC    /2814    QU             88330340
0A75 0  3525         DC    /3525    EM             88330350
0A76 0  3335         DC    /3335    CE             88330360
0A77 0  0000         DC    /0000    BLANK          88330370
0A78    0034  1N16V  BSS   52                      88330380
                *                                  88330390
0AAC 0  003E  INM17  DC    /003E    WORD COUNT     88330400
0AAD 0  0000         DC    /0000    SPACE          88330410
0AAE 0  0000         DC    /0000    SPACE          88330420
0AAF 0  0000         DC    /0000    SPACE          88330430
0AB0 0  0000         DC    /0000    SPACE          88330440
0AB1 0  1229         DC    /1229    SR             88330450
0AB2 0  1533         DC    /1533    VC             88330460
0AB3 0  0012         DC    /0012    S              88330470
0AB4 0  3528         DC    /3528    EQ             88330480
0AB5 0  1435         DC    /1435    UE             88330490
0AB6 0  2533         DC    /2533    NC             88330500
0AB7 0  3500         DC    /3500    E              88330510
0AB8    0034  1N17V  BSS   52                      88330520
                *                                  88330530
0AEC 0  0017  INM18  DC    /0017    WORD COUNT     88330540
0AED 0  350A         DC    /350A    EO             88330550
0AEE 0  0A08         DC    /0A08    08             88330560
0AEF 0  0000         DC    /0000    SPACE          88330570
0AF0 0  0000         OC    /0000    SPACE          88330580
0AF1 0  2913         DC    /2913    RT             88330590
0AF2 0  2500         DC    /2500    N              88330600
```

INTERRUPT FUNCTION TEST

```
0AF3 0  0600         OC    /0600    6              88330610
0AF4 0  1329         OC    /1329    TR             88330620
0AF5 0  3133         OC    /3133    AC             88330630
0AF6 0  3500         OC    /3500    E              88330640
0AF7 0  3439         OC    /3439    01             88330650
0AF8 0  3400         OC    /3400    0              88330660
0AF9 0  2526         DC    /2526    ND             88330670
0AFA 0  1300         OC    /1300    T              88330680
0AFB 0  3925         OC    /3925    IN             88330690
0AFC 0  1329         OC    /1329    TR             88330700
0AFD 0  2713         OC    /2713    PT             88330710
0AFE 0  0026         DC    /0026    0              88330720
0AFF 0  2500         OC    /2500    N              88330730
0B00 0  2731         DC    /2731    PA             88330740
0B01 0  1212         OC    /1212    SS             88330750
0B02 0  0000         OC    /0000    BLANK          88330760
0B03 0  000C         DC    /0000    PASS NUMBER    88330770
0B04 0  FFFF         DC    /FFFF    TERM           88330780
                *                                  88330790
0B05 0  001B  INM19  DC    /001B    WORD COUNT     88330800
0B06 0  350A         OC    /350A    EO             88330810
0B07 0  0A09         OC    /0A09    09             88330820
0B08 0  0000         OC    /0000    SPACE          88330830
0B09 0  0000         DC    /0000    SPACE          88330840
0B0A 0  2913         OC    /2913    RT             88330850
0B0B 0  2500         OC    /2500    N              88330860
0B0C 0  0600         DC    /0600    6              88330870
0B0D 0  3517         OC    /3517    EX             88330880
0B0E 0  2735         OC    /2735    PE             88330890
0B0F 0  3313         OC    /3313    CT             88330900
0B10 0  3534         DC    /3534    ED             88330910
0B11 0  0039         OC    /0039    1              88330920
0B12 0  2513         DC    /2513    NT             88330930
0B13 0  2927         OC    /2927    RP             88330940
0B14 0  1300         OC    /1300    T              88330950
0B15 0  3629         OC    /3629    FR             88330960
0B16 0  2624         OC    /2624    OM             88330970
0B17 0  0039         OC    /0039    1              88330980
0B18 0  2512         OC    /2512    NS             88330990
0B19 0  1329         OC    /1329    TR             88331000
0B1A 0  2500         OC    /2500    N              88331010
0B1B 0  0000         DC    /0000    BLANK          88331020
0B1C 0  0000         OC    /0000    EXPECTED NUMBER 88331030
0B1D 0  0000         OC    /0000    BLANK          88331040
0B1E 0  3726         DC    /3726    GO             88331050
0B1F 0  1300         OC    /1300    T              88331060
0B20 0  0000         OC    /0000    ACTUAL NUMBER  88331070
0B21 0  FFFF         OC    /FFFF    TERM           88331080
                *                                  88331090
0B22 0  000F  INM20  OC    /000F    WORD COUNT     88331100
0B23 0  350A         DC    /350A    EO             88331110
0B24 0  0A31         DC    /0A31    OA             88331120
0B25 0  0000         DC    /0000    SPACE          88331130
0B26 0  0000         DC    /0000    SPACE          88331140
0B27 0  3326         DC    /3326    CO             88331150
0B28 0  2512         DC    /2512    NS             88331160
0B29 0  2623         OC    /2623    DL             88331170
0B2A 0  3500         OC    /3500    E              88331180
0B2B 0  3214         OC    /3214    BU             88331190
0B2C 0  1313         OC    /1313    TT             88331200
0B2D 0  2625         OC    /2625    ON             88331210
0B2E 0  0036         DC    /0036    F              88331220
0B2F 0  3139         OC    /3139    A1             88331230
0B30 0  2335         OC    /2335    LE             88331240
0B31 0  3400         OC    /3400    D              88331250
0B32 0  FFFF         DC    /FFFF    TERM           88331260
                *                                  88331270
0B33 0  0017  INM21  OC    /0017    WORD COUNT     88331280
```

INTERRUPT FUNCTION TEST

0B34 0	340A	DC	/340A	00		BB331290
0B35 0	0A02	OC	/0A02	02		BB331300
0R36 0	0000	DC	/0000	SPACE		BB331310
0B37 0	0000	OC	/0000	SPACE		BB331320
0B38 0	3326	OC	/3326	CO		BB331330
0B39 0	2512	DC	/2512	NS		BB331340
083A 0	2623	DC	/2623	DL		BB331350
0B38 0	3500	OC	/3500	E		BB331360
0B3C 0	3214	DC	/3214	BU		BB331370
0B30 0	1313	OC	/1313	TT		BB331380
0B3E 0	2625	DC	/2625	ON		BB331390
083F 0	0026	DC	/0026	D		BB331400
0B40 0	2500	OC	/2500	N		BB331410
0B41 0	2335	OC	/2335	LE		BB331420
0B42 0	1535	OC	/1535	VE		BB331430
0B43 0	2300	OC	/2300	L		BB331440
0B44 0	0000	OC	/0000	LEVEL NUMBER		BB331450
0B45 0	0039	OC	/0039	I		BB331460
0B46 0	2312	DC	/2312	LS		BB331470
0B47 0	1600	OC	/1600	W		BB331480
0B4B 0	3239	OC	/3239	BI		BB331490
0B49 0	1300	OC	/1300	T		BB331500
0B4A 0	0000	0	0	ILSW BIT		BB331510
0B4B 0	FFFF	OC	/FFFF	TERM		BB331520
		*				BB331530
0B4C 0	0021	INM22 DC	/0021	WORD COUNT		BB331540
0B40 0	330A	DC	/330A	CO		BB331550
084E 0	0A07	DC	/0A07	07		BB331560
084F 0	0000	DC	/0000	SPACE		BB331570
0B50 0	0000	OC	/0000	SPACE		BB331580
0B51 0	1235	DC	/1235	SE		BB331590
0B52 0	1300	DC	/1300	T		BB331600
0B53 0	3439	OC	/3439	OI		BB331610
0B54 0	1231	DC	/1231	SA		BB331620
0B55 0	3223	DC	/3223	BL		BB331630
0B56 0	3500	DC	/3500	E		BB331640
0B57 0	2625	OC	/2625	DN		BB331650
0B58 0	0038	DC	/0038	H		BB331660
0C59 0	3913	DC	/3913	IT		BB331670
085A 0	0033	DC	/0033	C		BB331680
0B58 0	3500	OC	/3500	E		BB331690
085C 0	3125	OC	/3125	AN		BB331700
0B50 0	3400	DC	/3400	D		BB331710
085E 0	3326	DC	/3326	CO		BB331720
085F 0	2512	DC	/2512	NS		BB331730
0860 0	0032	DC	/0032	B		BB331740
0B61 0	1325	DC	/1325	TN		BB331750
0862 0	1200	DC	/1200	S		BB331760
0863 0	0000	DC	/0000	BLANK		BB331770
0864 0	1235	DC	/1235	SE		BB331780
0B65 0	1300	DC	/1300	T		BB331790
0B66 0	1329	DC	/1329	TR		BB331800
0867 0	3133	DC	/3133	AC		BB331810
0868 0	3500	DC	/3500	E		BB331820
0869 0	3125	DC	/3125	AN		BB331830
086A 0	3400	DC	/3400	D		BB331840
086B 0	1213	DC	/1213	ST		BB331850
086C 0	3129	DC	/3129	AR		BB331860
0860 0	1300	DC	/1300	T		BB331870
086E 0	FFFF	DC	/FFFF	TERM		BB331880
		*				BB331890
0870	0000	BSS E	0			BB331900
0870 0	0017	INM23 DC	/0017	WORD COUNT		BB331910
0B71 0	350A	DC	/350A	EO		BB331920
0872 0	0A32	DC	/0A32	08		BB331930
0B73 0	0000	DC	/0000	SPACE		BB331940
0874 0	0000	DC	/0000	SPACE		BB331950
0875 0	2913	DC	/2913	RT		BB331960

INTERRUPT FUNCTION TEST

0B76 0	2500	DC	/2500	N		BB331970
						BB331980
0B77 0	0100	OC	/0100	1		BB331990
0B78 0	3925	OC	/3925	IN		BB332000
0B79 0	1329	OC	/1329	TR		BB332010
0B7A 0	2713	OC	/2713	PT		BB332020
0B7B 0	0025	OC	/0025	N		BB332030
0B7C 0	2613	OC	/2613	OT		BB332040
0B70 0	0039	OC	/0039	I		BB332050
0B7E 0	2538	OC	/2538	NH		BB332060
0B7F 0	3932	OC	/3932	IB		BB332070
0B80 0	3913	OC	/3913	IT		BB332080
0B81 0	3534	OC	/3534	EO		BB332090
0882 0	0031	OC	/0031	A		BB332100
0883 0	3613	OC	/3613	FT		BB332110
0B84 0	3529	OC	/3529	ER		BB332120
0B85 0	0000	OC	0	SPACE		BB332130
0886 0	0000	OC	/0000			BB332140
0B87 0	0000	OC	/0000	TERM		BB332150
0B88 0	FFFF	OC	/FFFF	TERM		BB332160
		*				BB332170
0B89 0	0014	INM24 OC	/0014	WORD COUNT		BB332180
0B8A 0	330A	DC	/330A	CO		BB332190
0B8B 0	0A08	OC	/0A08	08		BB332200
0B8C 0	0000	OC	0	SPACE		BB332210
0B80 0	0000	DC	0	SPACE		BB332220
0B8E 0	2935	OC	/2935	RE		BB332230
0B8F 0	2731	OC	/2731	PA		BB332240
0B90 0	3929	OC	/3929	IR		BB332250
0B91 0	0036	OC	/0036	F		BB332260
0B92 0	3139	DC	/3139	AI		BB332270
0B93 0	2314	OC	/2314	LV		BB332280
0B94 0	2935	OC	/2935	RE		BB332290
0895 0	0032	OC	/0032	B		BB332300
0B96 0	3536	OC	/3536	EF		BB332310
0897 0	2629	OC	/2629	OR		BB332320
0B98 0	3500	DC	/3500	E		BB332330
0B99 0	3326	OC	/3326	CO		BB332340
0B9A 0	2513	OC	/2513	NT		BB332350
0B98 0	3925	DC	/3925	IN		BB332360
0B9C 0	1439	DC	/1439	UI		BB332370
0B90 0	2537	OC	/2537	NG		BB332380
0B9E 0	FFFF	OC	/FFFF	TERM		BB332390
		*				BB332400
0B9F 0	0000	INM25 OC	/000D	WORD COUNT		BB332410
0BA0 0	350A	OC	/350A	EO		BB332420
0BA1 0	0A33	OC	/0A33	0C		BB332430
0BA2 0	0000	DC	0	SPACE		BB332440
0BA3 0	0000	OC	0	SPACE		BB332450
0BA4 0	3923	OC	/3923	IL		BB332460
0BA5 0	2335	OC	/2335	LE		BB332470
0BA6 0	3731	DC	/3731	GA		BB332480
0BA7 0	2300	OC	/2300	L		BB332490
0BA8 0	2913	OC	/2913	RT		BB332500
0BA9 0	2500	OC	/2500	N		BB332510
0BAA 0	3525	OC	/3525	EN		BB332520
0BAB 0	1329	OC	/1329	TR		BB332530
0BAC 0	1800	OC	/1800	Y		BB332540
0BAD 0	FFFF	OC	/FFFF	TERM		
0BAE	012D	ENO	START			BB833254 BB332550

INTERRUPT FUNCTION TEST

CROSS REFERENCE LISTING

SYMBOL	VALUE	REFERENCES
BSI	01FC	01C9
BSICK	01F8	0107
BSWO	018A	013D,016C,04E3,0501,050C,0513
BSW00	0192	0136,013F,0147,016D,018A,04E5,0503,050E,0515
BSW01	0193	018C
BSW1	018C	
CMTRP	068B	03A6,0419,063B,063E,0641,0644,0647,064A,0640,0650,0653,0656,0659,065C,065F,0662,0665,0668,066B,066E,0671,0674,0677,067A,067D,0680,0683,0686,0689,068C
CMT00	06AC	06A7
CMT01	06B1	06AB
CMT02	06A8	06A3
CMT03	06B4	06A9
CMT04	06C2	0601
CMT05	068F	06BB
CMT06	06CB	06B8
CNC02	0194	012F
CNC03	0196	0132
CNM00	06CA	0309,0430,0692,06A8,06C4,06CC
CNSNS	0436	039E,0417,06D8,06E7
CNST0	04DC	04BB
CNST1	04DD	048F
CNST2	04E0	04C7
CNTRL	015B	0179
CN001	01F9	010B
CN101	0280	020A,0261,0263,02BF,0300
CN102	0281	020C,0234,0247,027A,06A1
CN103	0282	0212,0252
CN104	0283	
CN105	0284	020E,02B0
CN200	02B4	029C,02A2
CN201	02B4	02AA
CN300	0319	02C1,020A,02DF,02F5,0306
CN301	031E	02CC,02D8,02F9,02F0,02FF,0302,0304
CN302	031A	0303
CN303	031B	02E9,0690
CN400	042B	0138,03B0,0391,0438
CN401	0429	0138,0349,034A,0405
CN402	042A	0352
CN403	042B	0410,0697
CN404	042C	036B,03EA
CN405	042D	03DA
CN406	042E	03FB
CN407	042F	03FE
CN408	0430	0401
CN409	0431	03B0
CN500	048A	045D,0460,0463
CN501	048B	045F,0461,0462
CN502	048C	0483
COOCV	058E	0566,05BC
COOC1	0595	05B1
CODC2	05A7	05A6
CODC3	05B2	05AC
CDDC4	0586	05BF,0590,0591
CDDWO	05BE	0561,0568,0595,05B5
CODOO	05C0	059C,0590,05A1,05A2
CODO1	05C1	05A9,05B2
CODO2	05C2	05B4
COMP	0433	03B7
CONO1	013E	
CDN03	016C	0165
CON05	0166	0161
CON06	0159	0170
CTRL1	014E	0149
CTRL2	0155	0150

INTERRUPT FUNCTION TEST

SYMBOL	VALUE	REFERENCES
CTRL3	0158	0140,0154
DELAY	05F3	036F,039C,05FA,05FC,05FD
DCLY1	05FF	05F6
OELY2	0600	05F7,05F8
ECKSW	0286	0214,0230
ERALT	04F9	0410,04F8,04FA,0910
ERRIO	0522	04FF,0508
ERROR	04F5	01ED,0238,02EE,03CF,0315,034C,0371,0387,03A0,0441,0478,04FB,04FC,051A,051C,06AC,0681,06BF,06CE
ERRO1	050B	04FE
ERRO2	050A	0507
ERRO3	0513	051F
FAIL	01E1	01C4
HOLD	0432	0365,0386,03B8,03B9
ICTR	01F6	01C5,0106,0605
ILSAV	06D6	0350,0359,03AA,0694,068A,06C6,06CB
ILSW	06D4	0602,060B,0693,06DA,06E9
INCN	049F	0494
INLVT	092E	017C,01FE,0226,0269,0292,0285,02D0,032C,0342,035C,0374,038B,044E,0686,0903,0919
INM01	0949	0270
INM02	095E	024E,040C
INM03	096E	0200,0228,023A,0268,02B7,0202,02F0,032E,0344,034E,0360,0373,0378,0389,0684
INM04	0983	0202,022A,026D,02B9,02D4,0317,0330,0346,035E,0376,0443,C68E,0690,0683
INM05	099A	0204,022C,026F,0332,041B,041F,0420,06AE
INM06	09B4	0206,0336,035B,06D0
INM07	09C9	0173
INM08	0907	036E,03E4
INM09	09E7	039B
INM10	09F8	0384,03C0,045B
INM11	0A0B	038C,03D4,0408,0473
INM12	0A1D	017E,01B2
INM13	0A2E	02D6,0311
INM14	0A45	022E,0271,06C1
INM15	0A58	0294,0334,04EC
INM16	0A6C	04EF
INM17	0AAC	04F2
INM1B	0AEC	0479,047D
INM19	0805	0905,091B,091F
INM20	0B22	03A2
INM21	0B33	03AB,03B0,03BF,03C3
INM22	0B4C	03F5
INM23	0B70	01B2,01CA,01EF
INM24	0B89	01F2
INM25	0B9F	01A4
INSAO	0924	0908
INTER	01A2	01A1
INTST	048E	012D,01DD,0255,02A6,02E5,0413,0486,049D
INT00	01A6	019B,01E9
INT01	01FE	019C
INT02	0292	019D
INT03	02B5	019E
INT04	032B	019F
INT05	0446	01A0
IN001	01C1	01E7
IN002	010A	01E8
IN16V	0A7B	04C8,04CE,06E2,06F0,0704,071B,072C,0740,0754,0768,077C,0790,07A4,0788,07CC,07E0,07F4,0808,081C,0830,0844,0858,086C,0880,0894,08A8,08BC,08D0,08E4
IN17V	0ABB	04CA,04D0,06E4,06F6,070A,071E,0732,0746,075A,076E,0782,0796,07AA,07BE,0702,07E6,07FA,080E,0822,0836,084A,085E,0872,0886,089A,08AE,08C2,08D6,08EA
IDARA	0580	0555,056A,0573,0575,058C
1SINT	028A	0186,01C1,0100,01E1,01E4,0224,0230,0259,0250,0260,0262,0265
LHINO	05BF	0593,0597,05AB,05AE

INTERRUPT FUNCTION TEST

LOG	0523	0171,0180,01A2,01F0,024C,0278,0356,036C,0382,038A,
		0399,03C1,03C8,03D2,03E2,03F3,0406,040A,0459,0471,
		04EA,04E0,04F0,0508,0520,0547,0549,055C
LOGO1	0524	
LOGO2	0530	0538,053A
LOGG5	0538	0536
LOGO6	0541	0524,0564
LPERR	0520	01E8,021E,0275,02C4,033E,0364,037C,0395,03F1,0453,
		0519
LVLIX	018E	0158,0220,0298,02C8,0402
LVLST	04AA	0208,0288,0338,03E8,04B4
LVLS1	0486	04A0
LVLS2	0487	0480
LVL01	063A	0486
LVLO2	0643	
LVLO3	0646	
LVLO4	0649	
LVLO5	064C	
LVLO6	064F	
LVL07	0652	
LVLO8	0655	
LVLO9	0658	
LVL10	065B	
LVL11	065E	
LVL12	0661	
LVL13	0664	
LVL14	0667	
LVL15	066A	
LVL16	066D	
LVL17	0670	
LVL18	0673	
LVL19	0676	
LVL20	0679	
LVL21	067C	
LVL22	067F	
LVL23	0682	
LVL24	0685	
LVL25	0688	
LVL26	0630	
LVL27	0640	042C
LVSAV	0198	0148,0152,0156,0216,0219,029D,02CD,03C6,03DD
LVST1	04AE	0483
MASKO	0320	01A6,02C6,0312,048F,0525
MASKI	0322	01A8,02C7,0313,0491,0527
NEST1	04A0	024A,03F9,04A7
NSTCN	04A9	04A2
OPINO	019A	0146,0529
PLEXT	0607	01B8,01CE
PL1	01C4	01B9,01F7
PL2	01O5	01CC,01F8
POLER	01E9	01C7,0108
POLL	0601	01F5,0604
PRIPT	04E2	02A4,0300,03E6,04F3
PRIST	04B8	0296,03C4,03D8,040A
PRIXT	04F3	04E9
PRIOI	06E0	04C2,06E8
PRIO2	0716	0721
PRIO3	072A	0735
PRIO4	073E	0749
PRIO5	0752	0750
PRIO6	0766	0771
PRIO7	077A	0785
PRIO8	078E	0799
PRIO9	07A2	07AD
PRI10	0786	07C1
PRI11	07CA	0705
PRI12	070E	07E9
PRI13	07F2	07FD

INTERRUPT FUNCTION TEST

PRI14	0806	0811
PRI15	081A	0825
PRI16	082E	0839
PRI17	0842	0840
PRI18	0856	0861
PRI19	086A	0875
PRI20	087E	0889
PRI21	0892	0890
PRI22	08A6	08B1
PRI23	088A	08C5
PRI24	08CE	0809
PRI25	08E2	08E0
PRI26	06EE	040C,06F9
PRI27	0702	0420
PRSN	0586	053C
PRSNS	0584	0530,0540
PRWRT	0588	052F,0538
PRO20	0723	071C
PRO21	0710	0725
PRO30	0737	0730
PRO31	0731	0739
PRO32	073C	0737
PRO40	074B	0744
PRO41	0745	074D
PRO42	0750	0748
PRO50	075F	0758
PRO51	0759	0761
PRO52	0764	075F
PRO60	0773	076C
PRO61	0760	0775
PRO62	0778	0773
PRO70	0787	0780
PRO71	0781	0789
PRO72	078C	0787
PRO80	0798	0794
PRO81	0795	0790
PRO82	07A0	079B
PRO90	07AF	07A8
PRO91	07A9	07B1
PRO92	07B4	07AF
PR100	07C3	078C
PR101	07B0	07C5
PR102	07C8	07C3
PR110	0707	07D0
PR111	0701	0709
PR112	070C	0707
PR120	07E8	07E4
PR121	07E5	07E0
PR122	07F0	07E8
PR130	07FF	07F8
PR131	07F9	0801
PR132	0804	07FF
PR140	0813	080C
PR141	0800	0815
PR142	0818	0813
PR150	0827	0820
PR151	0821	0829
PR152	082C	0827
PR160	0838	0834
PR161	0835	0830
PR162	0840	0838
PR170	084F	0848
PR171	0849	0851
PR172	0854	084F
PR180	0863	085C
PR181	0850	0865
PR182	0868	0863
PR190	0877	0870

INTERRUPT FUNCTION TEST

PR191	0871	0879
PR192	087C	0877
PR200	088B	0884
PR201	0885	088D
PR202	0890	0888
PR210	089F	0898
PR211	0899	08A1
PR212	08A4	089F
PR220	0883	08AC
PR221	08A0	0885
PR222	0888	0883
PR230	08C7	08C0
PR231	08C1	08C9
PR232	08CC	08C7
PR240	08D8	0804
PR241	0805	08D0
PR242	08E0	0808
PR250	08EF	08E8
PR251	08E9	08F1
PR252	08F4	08EF
PR260	06F8	06F4
PR261	06F5	06FD
PR262	0700	04D6,05FB
PR270	070F	0708
PR271	0709	0711
PR272	0714	04D8,070F
PSSW	0285	0210,0240,028E,02E2
REOCE	0712	0703,0709
REGER	06E0	06E1
REQTR	06FE	0422,06EF,06F5
REQ00	0726	0717,0710
REO01	073A	0728,0731
REO02	074E	073F,0745
REO03	0762	0753,0759
REQ04	0776	0767,076D
REO05	078A	0778,0781
REO06	079E	078F,0795
REO07	0782	07A3,07A9
REO08	07C6	07B7,07BD
REQ09	070A	07C8,0701
REO10	07EE	070F,07E5
REO11	0802	07F3,07F9
REO12	0816	0807,0800
REG13	082A	0818,0821
REO14	083E	082F,0835
REO15	0852	0843,0849
REO16	0866	0857,085D
REG17	087A	086B,0871
REO18	088E	087F,0885
RE019	08A2	0893,0899
REG20	0886	08A7,08A0
REO21	08CA	0888,08C1
REO22	08DE	08CF,0805
REO23	08F2	08E3,08E9
RTN	0198	016A
RTNNO	018F	015A,0160,0162,0166,016B,017A,010A,0250,02A8,02E7,
		040E,0481,0695,069B
RTNRT	0177	010F,0257,02A0,02EC,0415,0488
RT100	0212	0242,027F
RT101	0226	021C,025F
RT104	0238	0237,06AF,068D,06C8
RT105	0259	023C,0266
RT106	0267	023F,0273
RT107	0279	0249
RT108	0260	025B
RT109	0234	0278
RT110	0250	0245
RT300	028F	02E4

INTERRUPT FUNCTION TEST

RT301	0200	02C2,02FE,0305
RT302	0208	
RT303	02EE	020C
RT304	02F9	02CE
RT305	0200	02F3,0300,0314,0318
RT306	02C8	02F8
RT307	02FF	02FB
RT308	0306	069F
RT309	030F	0308
RT310	0315	030C
RT311	02F4	02E1
RT400	034A	033C
RT401	0438	033A,0445
RT402	0350	0340
RT403	0374	0366
RT404	036C	0362
RT405	038A	037E
RT406	03A4	0397
RT407	0300	
RT408	03E6	
RT409	03E2	
RT410	0417	03E0
RT411	0420	03EF
RT412	0382	037A
RT413	035C	034F,0355
RT414	040E	032A
RT415	03C4	03A3
RT500	045D	047F,0924,0925,0926,0927,0928,0929,092A,0928,092C,
		0920
RT501	0467	0466,047E,0921
RT502	047F	0451,0470
RT504	0481	0448,0475
RUNSW	0199	0137,0143,0243,0328,0446,06C2
SEQCK	0191	0177,010C,0253,02A8,02EA,0411,0484
SERVC	0607	0232,0283,042E,04A9,06A5,060B
SET01	048C	04C1
SET02	04C8	04C0
SIX	0190	0163
SNSWS	0188	0158
START	0120	0175,0184,0195,08AE
SVEXT	062E	0627
SVINT	0609	02F1,038E,03A4,0306,0438,049F,04F6,062E
SVIN0	0613	0623,062C
SVIN1	0615	0610
SV10	0638	060A,0619,061A,062D
SV0	0630	0621
SV1	0613	0613
SV2	0632	0611
SV3	0633	0628
SV4	0634	0610,0615,061E,0620,062B
SV5	0635	0614,0617,0618
SV6	0636	0612,0618,0629
SV7	0637	0600,0624
TRACE	08F6	04A7,08F8,08FA,08FE,0901,0907,090F,0912
TRAC0	0903	08FC
TRAC1	0914	090A,0920
TRAC2	0912	
TRAER	0477	0450,0468,046A
TRCN0	0921	08FB
TRCN1	0922	0914,0915,0916,0917
TRCN2	0923	08F7,0900,0911
TRIN0	0480	0457,0467,046E,0900
TWRTR	0548	0528,0553
TWRT0	0570	0554
TWRT1	057E	0563
TWR01	0554	0550
TWR02	055F	055F,057C
TWR03	0579	0572

INTERRUPT FUNCTION TEST

```
TWSNS   058A    0540,0557,056C
TWWRT   058C    0556,056B
UMSKO   0324    01B0,02F6,0499,0543
UMSK1   0326    01BF,02F7,049B,0545
VCTOR   01F5    01AB
WROSR   057F    054C,0570,0576,057A
WTA     0305    300A
WTB     03E5    300B
WTC     03F6    300C,0424,0426
WTD     0409    300D
WTE     0400    300E
WTF     045C    300F
WT1     013C    3001,01A5,01F3
WT10    0474    3010
WT11    051E    3011,0512
WT12    0537    3012,0531
WT13    0539    3013,0534
WT14    0552    3014
WT15    06C7    3015
WT2     0174    3002
WT3     0183    3003
WT4     027E    3004
WT5     024F    3005
WT6     0358    3006
WT7     0385    3007
WT8     0380    3008,0393
WT9     03CE    3009
XIO     01FA    01B1
XIOCC   028C    01B4,0222,029A,02CA,04D4
XIOCK   01F7    01C6
XIOSN   056C    056F
XIOWR   056B    0578
ZONE    05C3    05A4
ZONEN   05C7    05C3
ZONE1   0502    05C4
ZONE2   0500    05C5
ZONE3   05E7    05C6
```

TABLE OF CONTENTS

1. PURPOSE

THE PURPOSE OF THE 1800 PROCESSOR CONTROL (PC) FUNCTION TEST IS TO LOCATE
FAILING INSTRUCTIONS. EACH SEPARATE PC INSTRUCTION IS TESTED AND CHECKED
FOR COMPLIANCE WITH THE PRODUCT SPECIFICATIONS. FEATURES THAT ARE NOT
UNIQUE TO AN OPERATION CODE (INDEXING, INDIRECT ADDRESSING, ETC.) ARE ALSO
TESTED. I/O RELATED FEATURES (INTERRUPT, CYCLE STEAL, ETC.) ARE NOT TESTED.

```
*************************************************************************
*                                                                       *
*       PROGRAM RUNNING TIME                                            *
*                                                                       *
*       2 USEC MACHINE - APPROXIMATELY 1 MINUTE                         *
*                                                                       *
*       4 USEC MACHINE - APPROXIMATELY 2 MINUTES                        *
*************************************************************************
```

2. PREREQUISITES

    2.1   PROGRAM PREREQUISITES

        THE PROGRAM CAN BE OPERATED BY ITSELF BUT MUST BE LOADED BY THE 1800
        BASIC DIAGNOSTIC LOADER.

    2.2   EQUIPMENT PREREQUISITES

        A. 1800 PC HAVING 4096-WORD STORAGE.
        B. 1442 CARD READ/PUNCH OR 1054 PAPER TAPE READER.

3. USE PROCEDURE

    3.1   PROGRAM LOADING

        THE 1800 P C FUNCTION TEST (0884) IS LOADED BY THE 1800 BASIC LOADER.
        SEE THE 1800 BASIC LOADER DOCUMENTATION FOR THE DESCRIPTION OF THE
        LOADING PROCEDURE.

    3.2   PROGRAM OPERATION

        AFTER THE PROGRAM IS LOADED THE FOLLOWING NORMAL WAITS OCCUR,

LOCATION B REG	SYMBOLIC	DESCRIPTION AND ACTION
3000	IX0001	START OF PROGRAM. SET ALL BIT SWITCHES ON. PRESS START.
3001	IX0011	TESTING OF BIT SWITCHES ON COMPLETE, TURN OFF, PRESS START.
3002	IX0031	TESTING OF BIT SWITCHES OFF COMPLETE SET IN OPTION, PRESS START.
3003	IX0071	PROGRAM COMPLETED. PUSH START TO RERUN PROGRAM. IF OTHER WAITS OCCUR, REFER TO SECTION 3.5 FOR ERROR ISOLATION.

        ANY WAITS OTHER THAN THOSE ABOVE ARE ERROR WAITS.

        WHEN AN ERROR WAIT IS OBTAINED,
        1. SEE THE PROGRAM LISTING TO DETERMINE THE PROBLEM. ERROR WAITS
            ARE DOCUMENTED AT THE FRONT OF THE PROGRAM LISTING BY THE
            CONTENTS OF THE B REGISTER.

        2. IF THE ERROR WAIT HAS B REGISTER LESS THAN 3069, THE OPERATOR
            CANNOT LOOP ON THAT ERROR. INSTEAD, THE OPERATOR SHOULD SINGLE
            INSTRUCTION STARTING AT THE BEGINNING OF THE FAILING ROUTINE TO
            DETERMINE THE EXACT FAILURE. (SECTION 3.5)

        3. IF THE ERROR WAIT HAS B REGISTER GREATER THAN 3068, THE OPERATOR
            SHOULD, (SECTION 3.5)
            A. LOOP INSTRUCTION BEING TESTED   (BIT SW 8 ON)
                OR IF A LARGER LOOP IS DESIRED
                    LOCK ON ERROR (BIT SW 12 ON)
                    OR
                    LOOP ON ROUTINE (BIT SW 10 ON)
            B. SINGLE STEP TO LOCATE THE EXACT FAILURE.
            C. IF NO ERROR OCCURS, BYPASS THE ERROR WAIT (BIT SW 14 ON) AND
               USE A SCOPE TO DETERMINE THE FAILURE.

TABLE 1

```
********************************************************************************
*           DATA ENTRY SWITCHES            *    DESCRIPTION                   *
* 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15    *                                 *
*             .   .     .     .     .      *                                 *
*             .   .     .     .     1......  BYPASS ERROR WAIT (SEE NOTE)     *
*             .   .     .     1............  LOCK ON ERROR                    *
*             .   .     1..................  LOOP PROGRAM                     *
*             .   1......................... LOOP ON ROUTINE                 *
*             1............................. LOOP ON INSTRUCTION BEING TESTED*
*   1....................................... BYPASS MPL/DIV TEST             *
* NOTE- IF ERROR OCCURS, BITS 12 OR 8 MUST BE ON TO MAKE BIT 14 EFFECTIVE.   *
********************************************************************************
```

    3.3   TERMINATION

        NORMAL TERMINATION OCCURS WITH PROGRAM STOPPING AT WAIT WITH
        B REG = 3003.

3.4   RESTART PROCEDURE

PRESS STOP, RESET, AND START BUTTONS.

3.5   ERROR WAITS

THERE ARE TWO TYPES OF ERROR CONDITIONS WHICH CAUSE ERROR WAITS.

1. ERRORS WHICH USE THE COMMON ERROR CONTROL ROUTINE (F000).
2. ERRORS WHICH OCCUR BEFORE SUFFICIENT PORTIONS OF THE HARDWARE
   HAVE BEEN CHECKED OUT TO ALLOW USE OF THE COMMON ERROR CONTROL
   ROUTINE.

ERRORS WHICH USE THE COMMON ERROR CONTROL ROUTINE HAVE B REG NUMBERS
OF /3069 AND UP. WHEN A NUMBERED WAIT OCCURS, BITS 5-15 OF THE STORAGE
(B REG = 3XXX). WHEN A NUMBERED WAIT OCCURS, BITS 5-15 OF THE STORAGE
BUFFER REGISTER GIVE THE ERROR IDENTIFICATION NUMBER. TO FIND THE
FAILING ROUTINE, LOOK IN THE ERROR IDENTIFICATION TABLE (IN FRONT OF
THE LISTING) . THIS WILL GIVE YOU THE SYMBOLIC AND ACTUAL STARTING
ADDRESS OF THE ROUTINE THAT FAILED.

ERRORS WHICH DO NOT USE THE COMMON ERROR CONTROL ROUTINE HAVE B REG NUMBERS
FROM /3003 THRU /3068. THE INSTRUCTION REG WILL POINT
DIRECTLY TO THE FAILING ROUTINE. TO FACILITATE FINDING THE START OF
A TEST ROUTINE EACH TEST ROUTINE BEGINS WITH A LABEL HAVING AN A OR B
AS ITS FIRST LETTER. IN THE LISTING EACH ROUTINE IS FURTHER BRACKETED
BY A SOLID LINE OF ASTRISKS. TO FIND THE FAILING ROUTINE OF ERRORS
WHICH DO NOT USE THE COMMON ERROR CONTROL START AT THE LOCATION
SPECIFIED BY THE ERROR WAIT AND WORK UP THE LISTING (BACKWARDS) UNTIL
THE FIRST SYMBOLIC LOCATION WHICH HAS A LABEL BEGINNING WITH A AND B.
THIS IS THE START OF THE FAILING ROUTINE.

TWO WAYS OF LOCATING A FAILURE ARE AS FOLLOWS-

A. DETERMINE WHAT FAILURE CAUSED THE ERROR WAIT. TO LOCATE THE
   FAILURE, IT IS RECOMMENDED THAT THE PROGRAM BE MANUALLY ENTERED
   AT THE START OF THE FAILING ROUTINE AND SINGLE INSTRUCTION,
   FOLLOWING THE LISTING TO DETERMINE THE EXACT FAILURE.

B. USE AN OSCILLOSCOPE TO HELP LOCATE THE FAILURE. IF THE FAILURE
   IS IN THE COMMON-ERROR ROUTINE, SIMPLY TURN ON CONSOLE ENTRY
   SWITCH 8 AND DEPRESS START PUSHBUTTON TO LOOP ON THE INSTRUCTION
   BEING TESTED. IF THE FAILURE IS IN THE FIRST PART OF THE
   PROGRAM (BEFORE THE COMMON ERROR ROUTINE INSTRUCTIONS HAVE BEEN
   CHECKED OUT), A BRANCH (MDX) TO THE BEGINNING OF THE ROUTINE MAY
   BE MANUALLY INSERTED IN PLACE OF THE WAIT INSTRUCTION. THEN, THE
   ROUTINE MAY BE LOOPED.

4. PRINTOUTS (NONE)

5. COMMENTS

THE 1800 P-C FUNCTION TEST STARTS WITH VERY SIMPLE INSTRUCTIONS AND
DETERMINES IF EACH INSTRUCTION PERFORMS TO SPECIFICATIONS. EACH SUCCESSIVE
ROUTINE ATTEMPTS TO UTILIZE ONLY AN INSTRUCTION THAT HAS NOT BEEN PREVIOUSLY
TESTED. THE PROGRAM OPTIONS PROVIDE A MEANS FOR CONTINOUSLY LOOPING THE
ENTIRE PROGRAM AND ALSO ALLOW FAILING ROUTINES TO BE LOOPED.

AN ATTEMPT IS MADE DURING THE EARLY STAGES OF THE PROGRAM TO DEVELOP THOSE
INSTRUCTIONS WHICH ALLOW THE USAGE OF THE COMMON CONTROL (F00E AND F005) AND
ERROR (F000) ROUTINES. AFTER THESE INSTRUCTIONS HAVE BEEN TESTED THE USER
THEN HAS THE ABILITY TO REQUEST VARIOUS CONTROL OPTIONS BY MEANS OF THE DATA
ENTRY SWITCHES.

5.1   OPERATING MODES

THE NORMAL MODE OF OPERATION IS WITH THE DATA ENTRY SWITCHES SET TO
/0000. THIS CAUSES A SINGLE PASS THROUGH THE PROGRAM WITH AN ERROR
WAIT OCCURING IF AN ERROR IS DETECTED.

IF AN ERROR IS DETECTED AND THE COMMON ERROR WAIT OCCURS, THE USER
SHOULD TURN ON THE '' LOOP ON ROUTINE '' (DATA ENTRY SWITCHES SET TO
/0020) AND SINGLE INSTRUCTION THROUGH THE FAILING ROUTINE TO ISOLATE
THE FAILING INSTRUCTION.

IF THE FAILING ROUTINE DOES NOT FAIL WHEN EXECUTED IN SINGLE
INSTRUCTION MODE, THE USER CAN TURN ON THE '' BYPASS ERROR WAIT''
SWITCH AND THE ''LOOP ROUTINE'' SWITCH (DATA ENTRY SWITCHES SET TO
/0022) AND PROCEED TO USE SCOPING TECHNIQUES TO ISOLATE THE FAILURE.

5.2   PROGRAM LABELS

LABELS OCCURING IN THE PROGRAM LISTING CAN BE QUICKLY IDENTIFIED
AS FOLLOWS-

A. LABELS STARTING WITH A OR B INDICATE THE BEGINNING OF A TEST
   ROUTINE.
B. LABELS STARTING WITH G, H, J, OR K INDICATE COMMUNICATION
   LABELS WITH A ROUTINE.
C. LABELS STARTING WITH V OR X ARE RESERVED FOR WAITS.
D. LABELS STARTING WITH N, R, OR S INDICATE A CONSTANT OR
   WORK AREA.
E. LABELS STARTING WITH F, W, Z OR U ARE USED IN COMMON OR SPECIAL
   ROUTINES THAT ARE NOT A REGULAR TEST ROUTINE.

6. APPENDIX (NONE)

```
                          ABS
02BC                      ORG      /3000                                    88400030
**********************************************************************      88400040
                                                                           88400050
              *  THIS ENGINEERING CHANGE REFLECTS MINOR BUT               88400060
              *  SIGNIFICANT MODIFICATIONS TO THE PROGRAM AND             88400070
              *  PROGRAM DESCRIPTION.                                      88400080
              *                                                           88400090
              *  THE CHANGES ARE--                                        88400100
              *                                                           88400110
              *  1.  THE PROGRAM IDENTIFICATION HAS BEEN ADDED           88400120
              *      JUST AFTER THE ORG 300 INSTRUCTION TO ENABLE        88400130
              *      THIS PROGRAM TO BE CALLED OFF THE DISK.             88400140
              *                                                           88400150
              *  2.  WAIT /3000 AT LABEL XOCO HAS BEEN INSERTED          88400160
              *      AT THE FRONT OF THE PROGRAM SO THAT THE             88400170
              *      INITIAL BIT SWITCH SETTINGS CAN BE MADE.            88400180
              *                                                           88400190
              *                                                           88400200
              *                                                           88400210
**********************************************************************      88400220
              *                                                           88400230
              *          OPERATING INSTRUCTIONS                          88400240
              *                                                           88400250
              *       BIT SWITCH SETTINGS                                88400260
              *                                                           88400270
              *       BIT 14 ON BYPASS ERROR WAIT                        88400280
              *                                                           88400290
              *             BIT 12 OR 8 MUST BE ON TO                    88400300
              *             MAKE BIT 14 EFFECTIVE.                       88400310
              *                                                           88400320
              *       BIT 13 NOT USED                                    88400330
              *                                                           88400340
              *       BIT 12 LOCK ON ERROR                              88400350
              *                                                           88400360
              *       BIT 11 ON LOOP PROGRAM                            88400370
              *                                                           88400380
              *       BIT 10 ON LOOP ROUTINE                            88400390
              *                                                           88400400
              *       BIT  9 NOT USED                                    88400410
              *                                                           88400420
              *       BIT  8 LOOP ON INSTRUCTION BEING                   88400430
              *              TESTED                                      88400440
              *       BIT  7 ON BYPASS MPL/DIV TEST                      88400450
              *                                                           88400460
              *                                                           88400470
              *                                                           88400480
              *                                                           88400490
              *                                                           88400500
              *                                                           88400510
              *                                                           88400520
              *                                                           88400530
              *                                                           88400540
**********************************************************************      88400550
B-REG    I-REG    *              A HALT AT                               88400560
**********************************************************************      88400570
              *                                                           88400580
3000 0  012E      OC      XOCO+1   1130 AND 1800                          88400590
              *                    SET DATA ENTRY SWITCHES                88400600
              *                    TO /FFFF + PRESS START                 88400610
              *                                                           88400620
              *                    (1800) ALSO SET S/P SWS TO            88400630
              *                    /FF00 AND PRESS START                  88400640
              *                                                           88400650
3001 0  0287      OC      X001+1   SET SENSE/PROG AND                     88400660
              *                    DATA ENTRY SWITCHES                    88400670
              *                    TO ZEROS AND PRESS                     88400680
              *                    START                                  88400690
                                                                          88400700
```

```
3002 0  02C8      OC      X003+1   SET SWITCHES FOR OPTIONS               88400710
              *                    AND PRESS START                       88400720
              *                                                           88400730
3003 0  0F7D      OC      X007+1   PROGRAM COMPLETED                      88400740
              *                                                           88400750
**********************************************************************      88400760
              *                                                           88400770
              *  ERROR IDENTIFICATION LISTING                            88400780
              *                                                           88400790
              *                                                           88400800
              *                                                           88400810
              *                                                           88400820
**********************************************************************      88400830
              ADDRESS    *                                               88400840
                 OF      *                                               88400850
B-REG         ROUTINE    *  A REG Q REG  XR-1  XR-2  XR-3  STATUS        88400860
**********************************************************************      88400870
3004 0  012E      DC      A080     MDX                                    88400880
              * SHORT FORM MDX FAILED TO MODIFY I CTR +1                 88400890
              *                                                           88400900
              *                                                           88400910
3005 0  012E      DC      A080     MDX          MOD+0                     88400920
3006 0  012E      DC      A080                  +1                        88400930
              * SHORT FORM MDX-SHOULD HAVE MODIFIED I CTR                88400940
              * +2 BUT MODIFIED BY 0 OR +1                               88400950
              *                                                           88400960
              *                                                           88400970
3007 0  012E      DC      A080     MDX          MOD+0                     88400980
3008 0  012E      DC      A080                  +1                        88400990
3009 0  012E      DC      A080                  +2                        88401000
300A 0  012E      DC      A080                  +3                        88401010
              * SHORT FORM MDX SHOULD HAVE MODIFIED I CTR                88401020
              * +4 BUT MODIFIED BY 0, +1, +2 OR +3                       88401030
              *                                                           88401040
              *                                                           88401050
300B 0  012E      DC      A080     MDX                                    88401060
              * MDX SHORT FORM FAILED TO MODIFY I CTR                    88401070
              *                                                           88401080
              *                                                           88401090
300C 0  012E      DC      A080     MDX          MOD+0                     88401100
300D 0  012E      DC      A080                  +1                        88401110
300E 0  012E      DC      A080                  +2                        88401120
              * MDX SHORT FORM-SHOULD HAVE MODIFIED I CTR                88401130
              * -2, DID MODIFY BY 0, +1 OR +2                            88401140
              *                                                           88401150
              *                                                           88401160
300F 0  013F      DC      AOCO     BSC,C                                  88401170
              * N/A    N/A   N/A   N/A   N/A   C+0                       88401180
              * BSC SKIPPED-SHOULD NOT HAVE                              88401190
              *                                                           88401200
              *                                                           88401210
3010 0  013F      OC      AOCO     BSC,0                                  88401220
3011 0  013F      OC      AOCO                                            88401230
              * N/A    N/A   N/A   N/A   N/A   C+0 AFTER LDS             88401240
              * N/A    N/A   N/A   N/A   N/A   C   AFTER 1ST BSC         88401250
              * FIRST BSC SKIPPED-SHOULD NOT HAVE                       88401260
              * SECOND BSC FAILED TO SKIP-INDICATING 1ST BSC            88401270
              * FAILED TO TURN OFF OVERFLOW                             88401280
              *                                                           88401290
              *                                                           88401300
3012 0  013F      OC      AOCO     BSC,C                                  88401310
              * N/A    N/A   N/A   N/A   N/A   OFF                       88401320
              * BSC DID NOT SKIP WITH OVERFLOW OFF                      88401330
              *                                                           88401340
              *                                                           88401350
3013 0  014C      OC      A100     LD                                     88401360
              * 0000   N/A   N/A   N/A   N/A   N/A                       88401370
              * ACCUM NOT EQUAL TO 0000                                 88401380
```

PROCESSUR-CUNTROLLER FUNCTION TEST

```
                              *                                          8B401390
                *****************************************************    8B401400
        ADDRESS           *                                             8B401410
          OF              *                                             8B401420
B-REG  ROUTINE   * A-REG O-REG  XR-1  XR-2  XR-3  STATUS               8B401430
****************************************************************         8B401440
3014 0  014C             OC     A100        LO                          8B401450
                 * 0000   N/A   N/A   N/A   N/A  N/A 1ST LD             8B401460
                 * OOUO   N/A   N/A   N/A   N/A  N/A 2ND LD             8B401470
                 * A LOAD 0000 FOLLOWED BY LOAD 0000 DID NOT           8B401480
                 * LEAVE ACCUM EQUAL TO 0000                           8B401490
                 *                                                     8B401500
                 *                                                     8B401510
3015 0  014C             DC     A100        BSC.E                      8B401520
                 * 0000   N/A   N/A   N/A   N/A  N/A                   8B401530
                 * BSC FAILED TO SKIP                                  8B401540
                 *                                                     8B401550
                 *                                                     8B401560
                 *                                                     8B401570
                 *                                                     8B401580
3016 0  0154             DC     A140        LO                          8B401590
                 * 0000   N/A   N/A   N/A   N/A  N/A 1ST VALVE         8B401600
                 * FFFF   N/A   N/A   N/A   N/A  N/A AFTER LD          8B401610
                 * LOAD FFFF ON TOP OF 0000 OID NOT LEAVE ACC         8B401620
                 * NEGATIVE                                           8B401630
                 *                                                     8B401640
                 *                                                     8B401650
3017 0  0154             DC     A140        BSC.+                      8B401660
                 * FFFF   N/A   N/A   N/A   N/A  N/A                   8B401670
                 *                                                     8B401680
                 *                                                     8B401690
3018 0  0154             DC     A140        BSC.E                      8B401700
                 * FFFF   N/A   N/A   N/A   N/A  N/A                   8B401710
                 * BSC SKIPPEO SHOULO NOT HAVE                        8B401720
                 *                                                     8B401730
                 *                                                     8B401740
                 *                                                     8B401750
3019 0  0154             OC     A140        ACCUM NOT EQUAL 7FFF       8B401750
301A 0  0154             DC     A140        ACCUM NOT EQUAL 3FFF       8B401760
301B 0  0154             DC     A140        ACCUM NOT EQUAL 1FFF       8B4C1770
301C 0  0154             OC     A140        ACCUM NOT EQUAL OFFF       8B401780
301D 0  0154             OC     A140        ACCUM NOT EQUAL 07FF       8B401790
301E 0  0154             OC     A140        ACCUM NOT EQUAL 03FF       8B401800
301F 0  0154             OC     A140        ACCUM NOT EQUAL 01FF       8B401810
3020 0  0154             OC     A140        ACCUM NOT EQUAL 00FF       8B401820
3021 0  0154             DC     A140        ACCUM NOT EQUAL 007F       8B401830
3022 0  0154             DC     A140        ACCUM NOT EQUAL 003F       8B401840
3023 0  0154             DC     A140        ACCUM NOT EQUAL 001F       8B401850
3024 0  0154             OC     A140        ACCUM NOT EQUAL 000F       8B401860
3025 0  0154             OC     A140        ACCUM NOT EQUAL 0007       8B401870
3026 0  0154             OC     A140        ACCUM NOT EQUAL 0003       8B401880
3027 0  0154             OC     A140        ACCUM NOT ECUAL 0001       8B401890
3028 0  0154             DC     A140        ACCUM NOT EQUAL 0000       8B401900
3049 0  0154             OC     A140        ACCUM NOT EQUAL 0000       8B401910
                 * FFFF   N/A   N/A   N/A   N/A  N/A LOADED           8B401920
                 * OOOU   N/A   N/A   N/A   N/A  N/A AFTER SRA'S      8B401930
                 * THE ABOVE WAITS OCCUR AS A RESULT OF A            8B401940
                 * FAILURE ON A ROUTINE THAT LOADS FFFF ON          8B401950
                 * 0000 AND CHECKS USING SRA 1 ANO BSC  E.          8B401960
                 *                                                     8B401970
                 *                                                     8B401980
302A 0  01A0             DC     A180        ACCUM NOT EQUAL FFFF       8B401990
302B 0  01A0             OC     A180        ACCUM NOT EQUAL FFFF       8B402000
302C 0  01AU             OC     A180        ACCUM NOT EQUAL 7FFF       8B402010
302D 0  01A0             OC     A180        ACCUM NOT EQUAL 3FFF       8B402020
302E 0  0154             OC     A140        ACCUM NOT EQUAL 1FFF       8B402030
302F 0  01A0             DC     A180        ACCUM NOT EQUAL OFFF       8B402040
3030 0  01A0             OC     A180        ACCUM NOT EQUAL 07FF       8B402050
3031 0  01A0             OC     A180        ACCUM NOT EQUAL 03FF       8B402060
```

PROCESSOR-CONTROLLER FUNCTION TEST

```
****************************************************************         8B402070
                                                                        8B402080
        ADDRESS           *                                             8B402090
          OF              *                                             8B402100
B-REG  ROUTINE   * A-REG Q-REG  XK-1  XK-2  XR-3  STATUS               8B402110
****************************************************************         8B402110
3032 0  01A0             OC     A180        ACCUM NOT EQUAL 01FF       8B402120
3033 0  01A0             DC     A180        ACCUM NOT EQUAL 00FF       8B402130
3034 0  01A0             OC     A180        ACCUM NGT EQUAL 007F       8B402140
3035 0  01A0             DC     A180        ACCUM NOT EQUAL 003F       8B402150
3036 0  01A0             OC     A180        ACCUM NOT EQUAL 001F       8B402160
3037 0  01A0             OC     A180        ACCUM NOT EQUAL 000F       8B402170
3038 0  01AU             OC     A180        ACCUM NOT EQUAL 0007       8B402180
3039 0  01A0             DC     A180        ACCUM NOT EQUAL 0003       8B402190
303A 0  01A0             DC     A180        ACCUM NOT EQUAL 0001       8B402200
303B 0  01A0             DC     A180        ACCUM NOT EQUAL 0000       8B402210
303C 0  01A0             DC     A180        ACCUM NOT EQUAL 0000       8B402220
                 * FFFF   N/A   N/A   N/A   N/A  N/A LOADED           8B402230
                 * 0000   N/A   N/A   N/A   N/A  N/A AFTER SRA'S      8B402240
                 * THE ABOVE WAITS OCCUR AS A RESULT OF A            8B402250
                 * FAILURE ON A ROUTINE THAT LOADS FFFF ON          8B402260
                 * FFFF AND CHECKS USING SRA 1 AND BSC  E.          8B402270
                 *                                                     8B402280
                 *                                                     8B402290
3030 0  01EB             OC     A1C0        LD 0000 ON 0000           8B402300
                 * 0000   N/A   N/A   N/A   N/A  N/A                   8B402310
                 * ACCUM NOT EQUAL 0000                              8B402320
                 *                                                     8B402330
                 *                                                     8B402340
303E 0  01EB             DC     A1C0        LO FFFF ON 0000           8B402350
                 * 0000   N/A   N/A   N/A   N/A  N/A BEFORE LD        8B402360
                 * FFFF   N/A   N/A   N/A   N/A  N/A AFTER LD         8B402370
                 * ACCUM NOT EQUAL FFFF                              8B402380
                 *                                                     8B402390
                 *                                                     8B402400
303F 0  01F5             OC     A100        LD                        8B402410
                 * 0000   N/A   N/A   N/A   N/A  N/A                   8B402420
                 * ACCUM NOT EQUAL 0000                              8B402430
                 *                                                     8B402440
                 *                                                     8B402450
3040 0  01F5             DC     A1D0        EOR                       8B402460
                 * 0000   N/A   N/A   N/A   N/A  N/A                   8B402470
                 * 0000   N/A   N/A   N/A   N/A  N/A                   8B402480
                 * WITH ACCUM EQUAL 0000 AN EOR USING 0000 OIO       8B402490
                 * NOT RESULT IN ACCUM EQUAL 0000                    8B402500
                 *                                                     8B402510
                 *                                                     8B402520
3041 0  01F5             OC     A1D0        EOR                       8B402530
                 * FFFF   N/A   N/A   N/A   N/A  N/A LOADEO + EOR     8B402540
                 * 0000   N/A   N/A   N/A   N/A  N/A SHOULD BE        8B402550
                 * WITH ACCUM EGUAL FFFF AN EOR USING FFFF OIO       8B402560
                 * NOT RESULT IN ACCUM EQUAL 0000                    8B402570
                 *                                                     8B402580
                 *                                                     8B402590
3042 0  01F5             DC     A100        EOR                       8B402600
3043 0  01F5             DC     A1D0                                  8B402610
                 * 0000   N/A   N/A   N/A   N/A  N/A BEFORE          8B402620
                 * FFFF   N/A   N/A   N/A   N/A  N/A S/B AFTER       8B402630
                 * WITH ACCUM EQUAL 0000 AN EOR USING FFFF D10      8B402640
                 * NOT RESULT IN ACCUM EQUAL FFFF                   8B402650
                 *                                                     8B402660
                 *                                                     8B402670
3044 0  01F5             OC     A100        EOR                       8B402680
                 * FFFF   N/A   N/A   N/A   N/A  N/A BEFORE EOR      8B402690
                 * FFFF   N/A   N/A   N/A   N/A  N/A S/B AFTER       8B402700
                 * WITH ACCUM EOUAL FFFF AN EOR USING 0000 OIO      8B402710
                 * NOT RESULT IN ACCUM EQUAL FFFF                   8B402720
                 *                                                     8B402730
                 *                                                     8B402740
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*********************************************** ********************************* BB402750
        ADDRESS      *                                                          BB402760
        OF           *                                                          BB402770
B-REG   ROUTINE      * A-REG Q-REG XR-1  XR-2  XR-3  STATUS                      BB402780
*********************************************************************************  BB402790
3045 0  01F5             DC       A100        SRA + EOR                          BB402800
                    * 7FFF   N/A   N/A   N/A   N/A  N/A S/B AFTER SRA             BB402810
                    * 0000   N/A   N/A   N/A   N/A  N/A S/B AFTER EOR             BB402820
                    * WITH ACCM EQUAL 7FFF AN EOR USING 7FFF DID NOT             BB402830
                    * RESULT IN ACCUM EQUAL TO 0000                              BB402840
                    * RESULT IN ACCM EQUAL TO 0000                               BB402850
                    *                                                            BB402860
3046 0  0214             DC       A1E0        LD LONG FORM                       BB402870
                    * 0000   N/A   N/A   N/A   N/A  N/A S/B AFTER LD             BB402880
                    * ACCUM NOT EQUAL 0000-INDICATING WRONG                      BB402890
                    * LOCATION WAS LOADED                                        BB402900
                    *                                                            BB402910
                    *                                                            BB402920
3047 0  0214             DC       A1E0        LD LONG FORM                       BB402930
                    * C,NIED, N/A N/A   N/A   N/A  N/A S/B AFTER LD              BB402940
                    * 0000   N/A  N/A    N/A   N/A  N/A S/B AFTER EOR            BB402950
                    * ACCUM NET EQUAL 0000 INDICATING WRONG LOCATION             BB402960
                    * WAS LOADED                                                 BB402970
                    *                                                            BB402980
                    *                                                            BB402990
3048 0  0220             DC       A1F0        LD IND                            BB403000
3049 0  0220             DC       A1F0        LD IND                            BB403010
                    * 0000   N/A   N/A   N/A   N/A  N/A S/B FOR BSC              BB403020
                    * ACCUM NOT EQUAL 0000 INDICATING WRONG                      BB403030
                    * LOCATION WAS LOADED                                        BB403040
                    *                                                            BB403050
                    *                                                            BB403060
304A 0  0220             DC       A200        BSC LONG FORM                      BB403070
                    * UNCONDITIONAL BSC DID NOT BRANCH                           BB403080
                    *                                                            BB403090
                    *                                                            BB403100
304B 0  0220             DC       A200        BSC LONG FORM                      BB403110
                    * UNCONDITIONAL BSC SKIPPED-SHOULD BRANCH                    BB403120
                    *                                                            BB403130
                    *                                                            BB403140
304C 0  0220             DC       A200        BSC,E LONG FORM                    BB403150
304D 0  022D             DC       A200                                          BB403160
                    * FFFF   N/A   N/A   N/A   N/A   N/A                         BB403170
                    * BSC FELL THRU OR SKIPPED-SHOULD BRANCH                     BB403180
                    * DID NOT SKIP OR SKIPPED - SHOULD BR.                       BB403190
                    *                                                            BB403200
304E 0  022D             DC       A200        BSC,+ LONG FORM                    BB403210
304F 0  022D             DC       A200                                          BB403220
                    * FFFF   N/A   N/A   N/A   N/A  N/A S/B AT TEST              BB403230
                    * DID NOT SKIP OR SKIPPED - SHOULD BR.                       BB403240
                    *                                                            BB403250
                    *                                                            BB403260
3050 0  0220             DC       A200        BSC,Z LONG FORM                    BB403270
3051 0  022D             DC       A200                                          BB403280
                    * FFFF   N/A   N/A   N/A   N/A  N/A S/B AT TEST              BB403290
                    * BSC DID NOT SKIP OR SKIPPED - SHOULD BR.                   BB403300
                    *                                                            BB403310
                    *                                                            BB403320
3052 0  022D             DC       A200        BSC,- LONG FORM                    BB403330
                    * FFFF   N/A   N/A   N/A   N/A  N/A S/B AT TEST              BB403340
                    * BSC BRANCHED-SHOULD NOT                                    BB403350
                    *                                                            BB403360
                    *                                                            BB403370
3053 0  0220             DC       A200        BSC,C LONG FORM                    BB403380
3054 0  0220             DC       A200                                          BB403390
                    * N/A    N/A   N/A   N/A   N/A  C+0 S/B AT TEST              BB403400
                    * BSC DID NOT SKIP OR SKIPPED-SHOULD BRANCH                  BB403410
                    *                                                            BB403420
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*********************************************** ********************************* BB403430
        ADDRESS      *                                                          BB403440
        OF           *                                                          BB403450
B-REG   ROUTINE      * A-REG Q-REG XR-1  XR-2  XR-3  STATUS                      BB403460
*********************************************************************************  BB403470
3055 0  022D             DC       A200        BSC,0 LONG FORM                    BB403480
3056 0  0220             DC       A200                                          BB403490
                    * N/A    N/A   N/A   N/A   N/A  C+0 S/B AT TEST              BB403500
                    * BSC DID NOT SKIP OR SKIPPED-SHOULD BRANCH                  BB403510
                    *                                                            BB403520
                    *                                                            BB403530
3057 0  0220             DC       A200        BSC,0 LONG FORM                    BB403540
                    * N/A    N/A   N/A   N/A   N/A   C  S/B AT TEST              BB403550
                    * BSC FAILED TO TURN OFF OVERFLOW                            BB403560
                    *                                                            BB403570
                    *                                                            BB403580
3058 0  022D             DC       A200        BSC,C LONG FORM                    BB403590
                    * N/A    N/A   N/A   N/A   N/A  OFF S/B AT TEST              BB403600
                    * BSC BRANCHED-SHOULD NOT                                    BB403610
                    *                                                            BB403620
                    *                                                            BB403630
3059 0  0220             DC       A200        BSC,0 LONG FORM                    BB403640
                    * N/A    N/A   N/A   N/A   N/A  OFF S/B AT TEST              BB403650
                    * BSC BRANCHED-SHOULD NOT                                    BB403660
                    *                                                            BB403670
                    *                                                            BB403680
305A 0  022D             DC       A200        BSC,+- LONG FORM                   BB403690
305B 0  0220             DC       A200                                          BB403700
                    * 0000   N/A   N/A   N/A   N/A   N/A                         BB403710
                    * BSC DID NOT SKIP OR SKIPPED-SHOULD BRANCH                  BB403720
                    *                                                            BB403730
                    *                                                            BB403740
305C 0  0220             DC       A200        BSC,+- LONG FORM                   BB403750
                    * FFFF   N/A   N/A   N/A   N/A  N/A S/B AT TEST              BB403760
                    * BSC BRANCHED-SHOULD NOT                                    BB403770
                    *                                                            BB403780
                    *                                                            BB403790
305D 0  0220             DC       A200        BSC,+- LONG FORM                   BB403800
                    * 0001   N/A   N/A   N/A   N/A  N/A S/B AT TEST              BB403810
                    * BSC BRANCHED SHOULD NOT                                    BB403820
                    *                                                            BB403830
                    *                                                            BB403840
305E 0  0220             DC       A200        BSC INDIRECT                       BB403850
305F 0  022D             DC       A200                                          BB403860
                    * BSC DID NOT SKIP OR SKIPPED-SHOULD BRANCH                  BB403870
                    *                                                            BB403880
                    *                                                            BB403890
3060 0  0270             DC       A240        BSI                                BB403900
                    * UNCONDITIONAL BSI DID NOT BRANCH                           BB403910
                    *                                                            BB403920
                    *                                                            BB403930
3061 0  0270             DC       A240        BSI                                BB403940
                    * UNCONDITIONAL BSI DID NOT STORE I CTR                      BB403950
                    * CORRECTLY                                                  BB403960
                    *                                                            BB403970
                    *                                                            BB403980
3062 0  0270             DC       A240        BSI,+ LONG FORM                    BB403990
3063 0  0270             DC       A240                                          BB404000
                    * 0000   N/A   N/A   N/A   N/A  N/A S/B AT TEST              BB404010
                    * BSI DID NOT SKIP OR SKIPPED-SHOULD BRANCH                  BB404020
                    *                                                            BB404030
                    *                                                            BB404040
3064 0  0270             DC       A240        BSI,+ LONG FORM                    BB404050
                    * BSI DID NOT STORE THE I CTR CORRECTLY                      BB404060
                    *                                                            BB404070
                    *                                                            BB404080
3065 0  0282             DC       A900        STORE                              BB404090
                    * STORE INSTRUCTION FAILED                                   BB404100
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************************************************************** 88404110
        AOORESS         *                                     88404120
          OF            *                                     88404130
  B-REG   ROUTINE       * A-REG Q-REG  XR-1  XR-2  XR-3  STATUS  88404140
**************************************************************  88404150
  3066 0  0282             OC      A900      XIO  SENSE/PROG SWS  88404160
                       * FF00  N/A   N/A   N/A   N/A   N/A S/8 AT TEST  88404170
                       * ACCUM NOT EQUAL TO FF00-- SENSE/PROG SWS  88404180
                       * WERE INCORRECTLY SENSED              88404190
                       *                                      88404200
  3067 0  0282             OC      A900      XIO  OATA ENTRY SWS  88404210
                       * FF00  N/A   N/A   N/A   N/A   N/A S/8 AT TEST  88404220
                       * ACCUM NOT EQUAL TO FFFF-- DATA ENTRY SWS  88404230
                       * WERE INCORRECTLY READ                88404240
                       *                                      88404250
                       *                                      88404260
  3068 0  0282             OC      A900      XIO  SENSE/PROG SWS  88404270
                       * FF00  N/A   N/A   N/A   N/A   N/A S/8 AT TEST  88404280
                       * ACCUM NOT EQUAL TO 0000-- SENSE/PROG SWS  88404290
                       * WERE INCORRECTLY SENSEO              88404300
                       *                                      88404310
                       *                                      88404320
  3069 0  0282             OC      A900      XIO               88404330
                       * 0000  N/A   N/A   N/A   N/A  NT/8 AT TEST  88404340
                       * ACCUM NOT EQUAL TO 0000--OATA ENTRY SWS  88404350
                       * WERE INCORRECTLY REAO                88404360
                       *                                      88404370
                       *                                      88404380
                       *                                      88404390
                       *                                      88404400
         ****************************************************  88404410
                       *                                      88404420
                       * THE FOLLOWING ERRCRS ARE HANDLEO BY THE  88404430
                       * COMMON ERROR CONTROL ROUTINE.  THE IO NUMBER  88404440
                       * SHOWN FOR EACH ERROR WILL APPEAR IN BITS  88404450
                       * 5 THRU 15 OF THE WAIT INSTRUCTION.   88404460
                       *                                      88404470
         ****************************************************  88404480
  306A 0  0209             OC      A280      SRA 16           88404490
                       * FFFF  N/A   N/A   N/A   N/A   N/A S/8 AFTER LO  88404500
                       * 0000  N/A   N/A   N/A   N/A   N/A S/8 AFTER SRA  88404510
                       * ACCUM NOT ZERO                       88404520
                       *                                      88404530
                       *                                      88404540
  306B 0  02E3             OC      A281      SRA 15           88404550
                       * 8000  N/A   N/A   N/A   N/A   N/A S/8 AFTER LD  88404560
                       * 0001  N/A   N/A   N/A   N/A   N/A S/8 AFTER SRA  88404570
                       * ACCUM NOT EQUAL 0001                 88404580
                       *                                      88404590
                       *                                      88404600
  306C 0  02EE             OC      A282      SRA 1            88404610
                       * AAAA  N/A   N/A   N/A   N/A   N/A S/8 AFTER LD  88404620
                       * 5555  N/A   N/A   N/A   N/A   N/A S/8 AFTER SRA  88404630
                       * ACCUM NOT EQUAL 5555                 88404640
                       *                                      88404650
                       *                                      88404660
  306D 0  02F9             OC      A283      SRA 1            88404670
                       * 5555  N/A   N/A   N/A   N/A   N/A S/8 AFTER LO  88404680
                       * 2AAA  N/A   N/A   N/A   N/A   N/A S/8 AFTER SRA  88404690
                       * ACCUM NOT EQUAL 2AAA                 88404700
                       *                                      88404710
                       *                                      88404720
  306E 0  0304             OC      A284      SERIES OF SRAS-15  88404730
                       *                       *TOTAL SHIFTS  98404740
                       *                                      88404750
                       * 8000  N/A   N/A   N/A   N/A   N/A S/8 AFTER LO  88404760
                       * 0001  N/A   N/A   N/A   N/A   N/A S/8 AFTER SRA  88404770
                       * ACCUM NOT EQUAL 0001                 88404780
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************************************************************** 88404790
        AOORESS         *                                     88404800
          OF            *                                     88404810
  B-REG   ROUTINE       * A-REG Q-REG  XR-1  XR-2  XR-3  STATUS  88404820
**************************************************************  88404830
                       *                                      88404840
                       *                                      88404850
  306F 0  0319             OC      A2C0      ANO-MEMORY=0000   88404860
                       * 000G  N/A   N/A   N/A   N/A   N/A S/8 AFTER LO  88404870
                       * 0000  N/A   N/A   N/A   N/A   N/A AFTER ANO  88404880
                       * ACCUM NOT EQUAL 0000                 88404890
                       *                                      88404900
                       *                                      88404910
  3070 0  0323             OC      A2C4      ANO-MEMORY=FFFF   88404920
                       * 0000  N/A   N/A   N/A   N/A   N/A   88404930
                       * 0000  N/A   N/A   N/A   N/A   N/A   88404940
                       * ACCUM NOT EQUAL 0000 ·               88404950
                       *                                      88404960
                       *                                      88404970
  3071 0  0320             OC      A2CR      ANO-MEMORY=0000   88404980
                       * FFFF  N/A   N/A   N/A   N/A   N/A   88404990
                       * 0000  N/A   N/A   N/A   N/A   N/A   88405000
                       * ACCUM NOT EQUAL 0000                 88405010
                       *                                      88405020
                       *                                      88405030
  3072 0  0337             OC      A2CC      ANO-MEMORY=FFFF   88405040
                       * FFFF  N/A   N/A   N/A   N/A   N/A   88405050
                       * FFFF  N/A   N/A   N/A   N/A   N/A   88405060
                       * ACCUM NOT EQUAL FFFF                 88405070
                       *                                      88405080
                       *                                      88405090
  3073 0  0345             OC      A300      OR-MEMORY = 0000  88405100
                       * 0000  N/A   N/A   N/A   N/A   N/A AFTER LO+OR  88405110
                       * 0000  N/A   N/A   N/A   N/A   N/A AFTER EOR  88405120
                       * ACCUM NOT EQUAL 0000                 88405130
                       *                                      88405140
                       *                                      88405150
  3074 0  034F             OC      A302      OR-MEMORY=FFFF    88405160
                       * 0000  N/A   N/A   N/A   N/A   N/A AFTER LO + OR  88405170
                       * FFFF  N/A   N/A   N/A   N/A   N/A AFTER EOR  88405180
                       * ACCUM NOT EQUAL FFFF                 88405190
                       *                                      88405200
                       *                                      88405210
  3075 0  035A             OC      A304      OR-MEMORY=FFFF    88405220
                       * FFFF  N/A   N/A   N/A   N/A   N/A AFTER LO+OR ·  88405230
                       * FFFF  N/A   N/A   N/A   N/A   N/A AFTER EOR  88405240
                       * ACCUM NOT EQUAL FFFF                 88405250
                       *                                      88405260
                       *                                      88405270
  3076 0  0368             OC      A340      RTE 16           88405280
                       * FFFF  0000  N/A   N/A   N/A   N/A BEFORE RTE  88405290
                       * 0000  FFFF  N/A   N/A   N/A   N/A AFTER RTE  88405300
                       * ACCUM NOT EQUAL 0000                 88405310
                       *                                      88405320
                       *                                      88405330
  3077 0  0368             OC      A340      RTE 16           88405340
                       * 0000  FFFF  N/A   N/A   N/A   N/A BEFORE RTE  88405350
                       * FFFF  0000  N/A   N/A   N/A   N/A AFTER RTE  88405360
                       * ACCUM NOT EQUAL FFFF                 88405370
                       *                                      88405380
                       *                                      88405390
  3078 0  0381             OC      A380      SRT 32           88405400
                       * 8000  N/A   N/A   N/A   N/A   N/A BEFORE SRT  88405410
                       * FFFF  FFFF  N/A   N/A   N/A   N/A AFTER SRT  88405420
                       * ACCUM NOT EQUAL FFFF                 88405430
                       *                                      88405440
                       *                                      88405450
                       *                                      88405460
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***********************************************************  88405470
          ADDRESS       *                                    88405480
             OF         *                                    88405490
  B-REG   ROUTINE       * A-REG Q-REG XR-1  XR-2  XR-3  STATUS  88405500
***********************************************************  88405510
                        *                                    88405520
  3079 0  0381              DC      A380      SRT 32 + RTE 16   88405530
                        * 8000   N/A    N/A   N/A   N/A   N/A BEFORE SRT   88405540
                        * FFFF   FFFF   N/A   N/A   N/A   N/A AFTER SRT+RTE 88405550
                        * ACCUM NOT EQUAL FFFF-INDICATING Q REG FAILED   88405560
                        *                                    88405570
                        *                                    88405580
  307A 0  0396              DC      A384      SRT 32           88405590
                        * 4000   N/A    N/A   N/A   N/A   N/A AFTER LD    88405600
                        * 0000   0000   N/A   N/A   N/A   N/A AFTER SRT   88405610
                        * ACCUM NOT EQUAL 0000                88405620
                        *                                    88405630
                        *                                    88405640
  3078 0  0396              DC      A384      SRT 32 + RTE 16  88405650
                        * 4000   N/A    N/A   N/A   N/A   N/A AFTER LD    88405660
                        * 0000   0000   N/A   N/A   N/A   N/A AFTER SRT   88405670
                        * ACCUM NOT EQUAL 0000-INDICATING Q REG FAILED   88405680
                        *                                    88405690
                        *                                    88405700
  307C 0  03A9              DC      A388      SRT 15           88405710
                        * 5555   N/A    N/A   N/A   N/A   N/A AFTER LD    88405720
                        * 0000   AAAA   N/A   N/A   N/A   N/A AFTER SRT   88405730
                        * ACCUM NOT EQUAL 0000                88405740
                        *                                    88405750
                        *                                    88405760
  3070 0  03A9              DC      A388      SRT 15 + RTE 16  88405770
                        * 5555   N/A    N/A   N/A   N/A   N/A AFTER LD    88405780
                        * 0000   AAAA   N/A   N/A   N/A   N/A AFTER SRT 15  88405790
                        * AAAA   0000   N/A   N/A   N/A   N/A AFTER RTE 16  88405800
                        * ACCUM NOT EQUAL AAAA-INDICATING Q REG FAILED   88405810
                        *                                    88405820
                        *                                    88405830
  307E 0  038D              DC      A38C      SERIES OF SRTS-30  88405840
                                              *TOTAL SHIFTS      88405850
                        * 5555   N/A    N/A   N/A   N/A   N/A AFTER LD    88405860
                        * 0000   0001   N/A   N/A   N/A   N/A AFTER SRT'S  88405870
                        * ACCUM NOT EQUAL 0000                88405880
                        *                                    88405890
                        *                                    88405900
  307F 0  038D              DC      A38C      SERIES OF SRTS-30  88405910
                                              *TOTAL SHIFTS +    88405920
                                              *RTE 16           88405930
                        * 5555   N/A    N/A   N/A   N/A   N/A AFTER LD    88405940
                        * 0000   0001   N/A   N/A   N/A   N/A AFTER SRT'S  88405950
                        * 0001   0000   N/A   N/A   N/A   N/A AFTER RTE 16  88405960
                        * ACCUM NOT EQUAL 0001-INDICATING Q REG FAILED   88405970
                        *                                    88405980
                        *                                    88405990
  3080 0  03DD              DC      A3C0      RTE 15           88406000
                        * 5555   AAAA   N/A   N/A   N/A   N/A AFTER LD'S   88406010
                        * 5554   AAAB   N/A   N/A   N/A   N/A AFTER RTE 15  88406020
                        * ACCUM NOT EQUAL 5554 - RTE 15 Q TO A FAILED    88406030
                        *                                    88406040
                        *                                    88406050
  3081 0  03DD              DC      A3C0      RTE 15 + RTE 16  88406060
                        * 5555   AAAA   N/A   N/A   N/A   N/A AFTER LD'S   88406070
                        * 5554   AAA8   N/A   N/A   N/A   N/A AFTER RTE 15  88406080
                        * AAA8   5554   N/A   N/A   N/A   N/A AFTER RTE 16  88406090
                        * ACCUM NOT EQUAL AAA8-INDICATING Q REG FAILED   88406100
                        *                                    88406110
                        *                                    88406120
                        *                                    88406130
                        *                                    88406140
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***********************************************************  88406150
          ADDRESS       *                                    88406160
             OF         *                                    88406170
  B-REG   ROUTINE       * A-REG Q-REG XR-1  XR-2  XR-3  STATUS  88406180
***********************************************************  88406190
  3082 0  03F4              DC      A3C4      SERIES OF RTES-31  88406200
                                              *TOTAL SHIFTS      88406210
                        * 0000   8000   N/A   N/A   N/A   N/A AFTER LD    88406220
                        * 0001   0000   N/A   N/A   N/A   N/A AFTER RTE'S  88406230
                        * ACCUM NOT EQUAL 0001                88406240
                        *                                    88406250
                        *                                    88406260
  3083 0  03F4              DC      A3C4      SERIES OF RTES-31  88406270
                                              *TOTAL SHIFTS      88406280
                                              *FOLLOWED BY RTE 16  88406290
                        * 0000   8000   N/A   N/A   N/A   N/A AFTER LD    88406300
                        * 0001   0000   N/A   N/A   N/A   N/A AFTER RTE'S  88406310
                        * 0000   0001   N/A   N/A   N/A   N/A AFTER RTE 16  88406320
                        * ACCUM NOT EQUAL 0000-INDICATING Q REG FAILED   88406330
                        *                                    88406340
                        *                                    88406350
  3084 0  0419              DC      A400      SLA 16           88406360
                        * FFFF   FFFF   N/A   N/A   N/A   N/A AFTER LD    88406370
                        * 0000   FFFF   N/A   N/A   N/A   N/A AFTER SLA   88406380
                        * ACCUM NOT EQUAL 0000                88406390
                        *                                    88406400
                        *                                    88406410
  3085 0  0419              DC      A400      SLA 16           88406420
                        * FFFF   FFFF   N/A   N/A   N/A   OFF AFTER LD    88406430
                        * 0000   FFFF   N/A   N/A   N/A   C   AFTER SLA   88406440
                        * CARRY NOT SET                       88406450
                        *                                    88406460
                        *                                    88406470
  3086 0  0419              DC      A400      SLA 16 + RTE 16  88406480
                        * FFFF   FFFF   N/A   N/A   N/A   N/A AFTER LD    88406490
                        * 0000   FFFF   N/A   N/A   N/A   N/A AFTER SLA   88406500
                        * FFFF   0000   N/A   N/A   N/A   N/A AFTER RTE 16  88406510
                        * ACCUM NOT EQUAL FFFF-INDICATING Q REG FAILED   88406520
                        *                                    88406530
                        *                                    88406540
  3087 0  043A              DC      A408      SLA 16           88406550
                        * 0001   0000   N/A   N/A   N/A   N/A AFTER LD    88406560
                        * 0000   0000   N/A   N/A   N/A   N/A AFTER SLA   88406570
                        * ACCUM NOT EQUAL 0000                88406580
                        *                                    88406590
                        *                                    88406600
  3088 0  043A              DC      A408      SLA 16           88406610
                        * 0001   0000   N/A   N/A   N/A   C   AFTER LD    88406620
                        * 0000   0000   N/A   N/A   N/A   C   AFTER SLA   88406630
                        * CARRY NOT SET                       88406640
                        *                                    88406650
                        *                                    88406660
  3089 0  043A              DC      A408      SLA 16 + RTE 16  88406670
                        * 0001   0000   N/A   N/A   N/A   N/A AFTER LD    88406680
                        * 0000   0000   N/A   N/A   N/A   N/A AFTER SLA   88406690
                        * 0000   0000   N/A   N/A   N/A   N/A AFTER RTE 16  88406700
                        * ACCUM NOT EQUAL 0000-INDICATING Q REG FAILED   88406710
                        *                                    88406720
                        *                                    88406730
  308A 0  045A              DC      8400      SLA 1            88406740
                        * AAAA   0000   N/A   N/A   N/A   N/A AFTER LD    88406750
                        * 5554   0000   N/A   N/A   N/A   N/A AFTER SLA   88406760
                        * ACCUM NOT EQUAL 5554                88406770
                        *                                    88406780
                        *                                    88406790
                        *                                    88406800
                        *                                    88406810
                        *                                    88406820
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PROCESSOR-CONTROLLER FUNCTION TEST

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*********************************************************** 88406830
      ADDRESS        *                                     88406840
        OF           *                                     88406850
 B-REG  ROUTINE      * A-REG Q-REG  XR-1  XR-2  XR-3  STATUS 88406860
*********************************************************** 88406870
 308B 0  045A          OC      B400      SLA 1             88406880
                     * AAAA  0000   N/A   N/A   N/A   C    88406890
                     * 5554  0000   N/A   N/A   N/A   C    88406900
                     * CARRY NOT SET                       88406910
                     *                                     88406920
                     *                                     88406930
 308C 0  045A          OC      B400      SLA 1 + RTE 16    88406940
                     * AAAA  0000   N/A   N/A   N/A   N/A  88406950
                     * 5554  0000   N/A   N/A   N/A   N/A  88406960
                     * 0000  5554   N/A   N/A   N/A   N/A AFTER RTE 88406970
                     * ACCUM NOT EQUAL 0000-INDICATING Q REG FAILED 88406980
                     *                                     88406990
                     *                                     88407000
 308D 0  0478          OC      B406      SLA 1             88407010
                     * 5555  0000   N/A   N/A   N/A   N/A AFTER LD  88407020
                     * AAAA  0000   N/A   N/A   N/A   N/A AFTER SLA 88407030
                     * ACCUM NOT EQUAL AAAA                88407040
                     *                                     88407050
                     *                                     88407060
 308E 0  0478          DC      B406      SLA 1             88407070
                     * 5555  0000   N/A   N/A   N/A   C AFTER LD   88407080
                     * AAAA  0000   N/A   N/A   N/A   OFF AFTER SLA 88407090
                     * CARRY SET-SHOULD BE CLEAR           88407100
                     *                                     88407110
                     *                                     88407120
 308F 0  0478          OC      B406      SLA 1 + RTE 16    88407130
                     * 5555  0000   N/A   N/A   N/A   N/A AFTER LD  88407140
                     * AAAA  0000   N/A   N/A   N/A   N/A AFTER SLA 88407150
                     * 0000  AAAA   N/A   N/A   N/A   N/A AFTER RTE 88407160
                     * ACCUM NOT EQUAL 0000-INDICATING Q REG FAILED 88407170
                     *                                     88407180
                     *                                     88407190
 3090 0  0497          OC      B40A      SERIES OF SLAS-16 88407200
                     *                  *TOTAL SHIFTS      88407210
                     * 0001  0000   N/A   N/A   N/A   N/A AFTER SLA 0 88407220
                     * 0000  0000   N/A   N/A   N/A   N/A AFTER SLA'S 88407230
                     * ACCUM NOT EQUAL 0000                88407240
                     *                                     88407250
                     *                                     88407260
 3091 0  0497          DC      B40A      SERIES OF SLAS-16 88407270
                     *                  *TOTAL SHIFTS      88407280
                     * 0001  0000   N/A   N/A   N/A   C AFTER SLA 0 88407290
                     * 0000  0000   N/A   N/A   N/A   C AFTER SLA'S 88407300
                     * CARRY NOT SET                       88407310
                     *                                     88407320
                     *                                     88407330
 3092 0  0497          DC      840A      SERIES OF SLAS-16 88407340
                     *                  *TOTAL SHIFTS +    88407350
                     *                  *RTE 16            88407360
                     * 0001  0000   N/A   N/A   N/A   N/A AFTER SLA 0 88407370
                     * 0000  0000   N/A   N/A   N/A   N/A AFTER SLA'S 88407380
                     * 0000  0000   N/A   N/A   N/A   N/A AFTER RTE 16 88407390
                     * ACC NOT EQUAL 0000-INDICATING Q REG FAILED 88407400
                     *                                     88407410
                     *                                     88407420
 3093 0  04C4          DC      A440      SLT 32            88407430
                     * 0000  0001   N/A   N/A   N/A   N/A AFTER LD  88407440
                     * 0000  0000   N/A   N/A   N/A   N/A AFTER SLT 32 88407450
                     * ACCUM NOT EQUAL 0000                88407460
                     *                                     88407470
                     *                                     88407480
                     *                                     88407490
                     *                                     88407500
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*********************************************************** 88407510
      ADDRESS        *                                     88407520
        OF           *                                     88407530
 B-REG  ROUTINE      * A-REG Q-REG  YR-1  XR-2  YR-3  STATUS 88407540
*********************************************************** 88407550
 3094 0  04C4          DC      A440      SLT 32            88407560
                     * 0000  0001   N/A   N/A   N/A   N/A AFTER LD  88407570
                     * 0000  0000   N/A   N/A   N/A   C AFTER SLT 32 88407580
                     * CARRY NOT SET                       88407590
                     *                                     88407600
                     *                                     88407610
 3095 0  04C4          OC      A440      SLT 32 + RTE 16   88407620
                     * 0000  0001                     AFTER LD  88407630
                     * 0000  0000                     AFTER SLT 32 88407640
                     * 0000  0000                     AFTER RTE 16 88407650
                     * ACCUM NOT EQUAL 0000-INDICATING Q REG FAILED 88407660
                     *                                     88407670
                     *                                     88407680
 3096 0  04E1          DC      A444      SLT 16            88407690
                     * 0000  FFFF   N/A   N/A   N/A   N/A AFTER LD  88407700
                     * FFFF  0000   N/A   N/A   N/A   N/A AFTER SLT 16 88407710
                     * ACCUM NOT EQUAL FFFF                88407720
                     *                                     88407730
                     *                                     88407740
 3097 0  04E1          OC      A444      SLT 16            88407750
                     * 0000  FFFF   N/A   N/A   N/A   N/A AFTER LD  88407760
                     * FFFF  0000   N/A   N/A   N/A   OFF AFTER SLT 16 88407770
                     * CARRY ON SHOULD NOT BE              88407780
                     *                                     88407790
                     *                                     88407800
 3098 0  04E1          OC      A444      SLT 16 + RTE 16   88407810
                     * 0000  FFFF   N/A   N/A   N/A   N/A AFTER LD  88407820
                     * FFFF  0000   N/A   N/A   N/A   N/A AFTER SLT 16 88407830
                     * 0000  FFFF   N/A   N/A   N/A   N/A AFTER RTE 16 88407840
                     * ACCUM NOT EQUAL 0000-INDICATING Q REG FAILED 88407850
                     *                                     88407860
                     *                                     88407870
 3099 0  0500          OC      A44A      SLT 15            88407880
                     * 0000  5555   N/A   N/A   N/A   N/A AFTER LD  88407890
                     * 2AAA  8000   N/A   N/A   N/A   N/A AFTER SLT 15 88407900
                     * ACCUM NOT EQUAL 2AAA                88407910
                     *                                     88407920
                     *                                     88407930
 309A 0  0500          OC      A44A      SLT 15            88407940
                     * 0000  5555   N/A   N/A   N/A   N/A AFTER LD  88407950
                     * 2AAA  8000   N/A   N/A   N/A   OFF AFTER SLT 15 88407960
                     * CARRY SET-SHOULD NOT BE             88407970
                     *                                     88407980
                     *                                     88407990
 309B 0  0500          OC      A44A      SLT 15 + RTE 16   88408000
                     * 0000  5555   N/A   N/A   N/A   N/A AFTER LD  88408010
                     * 2AAA  8000   N/A   N/A   N/A   N/A AFTER SLT 15 88408020
                     * 8000  2AAA   N/A   N/A   N/A   N/A AFTER RTE 16 88408030
                     * ACCUM NOT EQUAL 8000-INDICATING Q REG FAILED 88408040
                     *                                     88408050
                     *                                     88408060
 309C 0  0520          OC      8440      SERIES OF SLTS-32 88408070
                     *                  *TOTAL SHIFTS      88408080
                     * 0000  0001   N/A   N/A   N/A   N/A AFTER LD  88408090
                     * 0000  0000   N/A   N/A   N/A   N/A AFTER SLT'S 88408100
                     * ACCUM NOT EQUAL 0000                88408110
                     *                                     88408120
                     *                                     88408130
 309D 0  0520          DC      8440      SERIES OF SLTS-32 88408140
                     *                  *TOTAL SHIFTS      88408150
                     * 0000  0001   N/A   N/A   N/A   N/A AFTER LD  88408160
                     * 0000  0000   N/A   N/A   N/A   C AFTER SLT'S 88408170
                     * CARRY NOT ON                        88408180
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****************** ********************************************************* 8B408190
     ADDRESS      *                                                          8B408200
     OF           *                                                          8B408210
B-REG   ROUTINE   * A-REG C-REG XR-1  XR-2  XR-3  STATUS                      8B408220
****************** ********************************************************* 8B408230
309E 0  0520          DC      8440      SERIES OF SLTS-32                     8B408240
                  *                     *TOTAL SHIFTS +                       8B408250
                  *                     *RTE 16                               8B408260
                  * 0000   0001  N/A  N/A  N/A  N/A AFTER LD                  8B408270
                  * 0000   0000  N/A  N/A  N/A  N/A AFTER SLT*S               8B*08280
                  * 0000   0000  N/A  N/A  N/A  N/A AFTER RTE 16              8B408290
                  * ACCUM NOT EQUAL 0000-INDICATING Q REG FAILED              8B408300
                  *                                                          8B408310
                  *                                                          8B408320
309F 0  0549          DC      A480      STO                                   8B408330
                  * 0000   N/A   N/A  N/A  N/A  N/A                          8B408340
                  * STORING 0000 INTO A STORAGE LOCATION                     8B408350
                  * CONTAINING FFFF DIO NOT RETURN 0000 WHEN                 8B408360
                  * RELOADED IN THE ACCUM                                    8B408370
                  *                                                          8B408380
                  *                                                          8B408390
30A0 0  0555          DC      A482      STO                                   8B408400
                  * FFFF   N/A   N/A  N/A  N/A  N/A                          8B408410
                  * STORING FFFF INTO A STORAGE LOCATION                     8B408420
                  * CONTAINING 0000 DID NOT RETURN FFFF WHEN                 8B408430
                  * RELOADED IN THE ACCUM                                    8B408440
                  *                                                          8B408450
                  *                                                          8B408460
30A1 0  0566          DC      A4C0      STS                                   8B408470
                  * N/A    N/A   N/A  N/A  N/A  OFF BEFORE STS               8B408480
                  * 0000   N/A   N/A  N/A  N/A  OFF AFTER LD                 8B408490
                  * STS OF 0000 INTO STORAGE LOCATION                        8B408500
                  * CONTAINING 0003 DID NOT RETURN 0000 WHEN                 8B408510
                  * RELOADED IN THE ACCUM                                    8B408520
                  *                                                          8B408530
                  *                                                          8B408540
30A2 0  0571          DC      A4C2      STS                                   8B408550
                  * N/A    N/A   N/A  N/A  N/A  C+O AFTER LDS                8B408560
                  * N/A    N/A   N/A  N/A  N/A  OFF ATER STS                 8B408570
                  * STS DID NOT CLEAR CARRY                                  8B408580
                  *                                                          8B408590
                  *                                                          8B408600
30A3 0  0571          DC      A4C2      STS  CK ACC                           8B408610
                  * INITIALLY ACC HAS CORE LOCATION OF                       8B408620
                  *   SYMBOLIC LABEL A4C2                                    8B408630
                  * ACC DISTROYED AFTER STS                                  8B408640
                  *                                                          8B408650
                  *                                                          8B408660
30A4 0  0571          DC      A4C2      STS                                   8B408670
                  * N/A    N/A   N/A  N/A  N/A  C+O AFTER LOS                8B408680
                  * N/A    N/A   N/A  N/A  N/A  OFF AFTER STS                8B408690
                  * STS DID NOT CLEAR OVERFLOW        AFTER STS              8B408700
                  *                                                          8B408710
                  *                                                          8B408720
30A5 0  0571          DC      A4C2      STS                                   8B408730
                  * N/A                           BEFORE LO                  8B408740
                  * 0003                           AFTER LD                  8B408750
                  * STS OF 0003 INTO A STORAGE LOCATION                      8B408760
                  * CONTAINING 0000 DID NOT RETURN 0003 WHEN                 8B408770
                  * RELOADED IN THE ACCUM                                    8B408780
                  *                                                          8B408790
                  *                                                          8B408800
30A6 0  0596          DC      A4CB      STS                                   8B408810
                  * N/A    N/A   N/A  N/A  N/A  C AFTER LDS                  8B408820
                  * 0002   N/A   N/A  N/A  N/A  OFF AFTER LD                 8B408830
                  * STS OF 0002 INTO A STORAGE LOCATION                      8B408840
                  * CONTAINING 0003 DID NOT RETURN 0002 WHEN                 8B408850
                  * RELOADED IN THE ACCUM                                    8B408860
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****************** ********************************************************* 8B408870
     ADDRESS      *                                                          8B408880
     OF           *                                                          8B408890
B-REG   ROUTINE   * A-REG C-REG XR-1  XR-2  XR-3  STATUS                      8B408900
****************** ********************************************************* 8B408910
30A7 0  0596          DC      A4C8      STS                                   8B408920
                  * N/A    N/A   N/A  N/A  N/A  C AFTER LDS                  8B408930
                  * 0000   N/A   N/A  N/A  N/A  OFF AFTER STS                8B408940
                  * STS OID NOT CLEAR CARRY                                  8B408950
                  *                                                          8B408960
                  *                                                          8B408970
30A8 0  05AC          DC      A4CC      STS                                   8B408980
                  * N/A    N/A   N/A  N/A  N/A  O AFTER LDS                  8B408990
                  * 0001   N/A   N/A  N/A  N/A  OFF AFTER STS                8B409000
                  * STS OF 0001 INTO A STORAGE LOCATION                      8B409010
                  * CONTAINING 0002 DID NOT RETURN 0001 WHEN                 8B409020
                  * RELOADED IN THE ACCUM                                    8B409030
                  *                                                          8B409040
                  *                                                          8B409050
30A9 0  05AC          DC      A4CC      STS                                   8B409060
                  * N/A    N/A   N/A  N/A  N/A  O AFTER LDS                  8B409070
                  * 0000   N/A   N/A  N/A  N/A  OFF AFTER LDA                8B409080
                  * STS DIO NOT CLEAR OVERFLOW                               8B409090
                  *                                                          8B409100
                  *                                                          8B409110
30AA 0  05C8          DC      A500      BSC,O+EZC                             8B409120
                  * 8001   N/A   N/A  N/A  N/A  C+O                          8B409130
                  * BSC SKIPPED-SHOULD NOT HAVE                              8B409140
                  *                                                          8B409150
                  *                                                          8B409160
30AB 0  05D3          DC      A502      BSC,-DC+                              8B409170
                  * 0000   N/A   N/A  N/A  N/A  C+O                          8B409180
                  * BSC SKIPPED-SHOULD NOT HAVE                              8B409190
                  *                                                          8B409200
                  *                                                          8B409210
30AC 0  05DE          DC      A504      BSC,O-E                               8B409220
                  * 8000   N/A   N/A  N/A  N/A  C+O                          8B409230
                  * BSC FAILED TO SKIP                                       8B409240
                  *                                                          8B409250
                  *                                                          8B409260
30AD 0  05DE          DC      A504      BSC,O                                 8B409270
                  * 8000   N/A   N/A  N/A  N/A  C                            8B409280
                  * BSC FAILED TO CLEAR OVERFLOW                             8B409290
                  *                                                          8B409300
                  *                                                          8B409310
30AE 0  05F5          DC      A508      BSC,C+Z                               8B409320
                  * 0001   N/A   N/A  N/A  N/A  OFF                          8B409330
                  * BSC FAILED TO SKIP                                       8B409340
                  *                                                          8B409350
                  *                                                          8B409360
30AF 0  0600          DC      A50A      BSC,+OCE LONG FORM                    8B409370
                  * 8001   N/A   N/A  N/A  N/A  C+O                          8B409380
                  * BSC DID NOT BRANCH - SHOULD HAVE                         8B409390
                  *                                                          8B409400
                  *                                                          8B409410
30B0 0  0600          DC      A50A      BSC,+OCE LONG FORM                    8B409420
                  * 8001   N/A   N/A  N/A  N/A  C+O                          8B409430
                  * BSC SKIPPED-SHOULD BRANCH                                8B409440
                  *                                                          8B409450
                  *                                                          8B409460
30B1 0  061D          DC      A50C      BSC,-Z LONG FORM                      8B409470
                  * 0004   N/A   N/A  N/A  N/A  C+O                          8B409480
                  * BSC OIO NOT BRANCH - SHOULD HAVE                         8B409490
                  *                                                          8B409500
                  *                                                          8B409510
30B2 0  061D          DC      A50C      BSC,-Z LONG FORM                      8B409520
                  * 0004   N/A   N/A  N/A  N/A  C+O                          8B409530
                  * BSC SKIPPED-SHOULD BRANCH                                8B409540
```

PROCESSOR-CONTROLLER FUNCTION TEST

```
****************************************************************  BB409550
            ADDRESS         *                                     BB409560
            OF              *                                     BB409570
  B-REG     ROUTINE         * A-REG Q-REG  XR-1  XR-2  XR-3  STATUS BB409580
********/*******************************************************  BB409590
                            *                                     BB409600
                            *                                     BB409610
  30B3 0  0631                 DC      A50E      BSC,+EOCZ LONG    BB409620
                            *                     *FORM            BB409630
                            * 8001   N/A    N/A   N/A   N/A   C+O  BB409640
                            * BSC BRANCHED-SHOULD NOT             BB409650
                            *                                     BB409660
                            *                                     BB409670
  30B4 0  0631                 DC      A50E      BSC,+EOCZ LONG    BB409680
                            *                     *FORM            BB409690
                            * 8001   N/A    N/A   N/A   N/A   C+O  BB40970C
                            * BSC SKIPPED-SHOULD NOT              BB409710
                            *                                     BB409720
                            *                                     BB409730
  30B5 0  0645                 DC      B500      BSC,+             BB409740
                            * 0001   N/A    N/A   N/A   N/A   C+O  BB409750
                            * BSC ON PLUS CLEARED THE OVERFLOW F-F BB40976C
                            *                                     BB409770
                            *                                     BB409780
  30B6 0  0645                 DC      B500      BSC,+             BB409790
                            * 0001   N/A    N/A   N/A   N/A   N/A  BB409800
                            * BSC FAILED TO SKIP                  BB409810
                            *                                     BB409820
                            *                                     BB409830
  30B7 0  0663                 DC      A540      BSI,ECO+Z LONG    BB409840
                            *                     *FORM            BB409850
                            * 8001   N/A    N/A   N/A   N/A   C+O  BB409860
                            * BSI DIO NOT BRANCH - SHOULD HAVE    BB409870
                            *                                     BB409880
                            *                                     BB409890
  30B8 0  0663                 DC      A540      BSI,ECO+Z LONG    BB409900
                            *                     *FORM            BB409910
                            * 8001   N/A    N/A   N/A   N/A   C+O  BB409920
                            * BSI SKIPPED-SHOULD BRANCH           BB409930
                            *                                     BB409940
                            *                                     BB409950
  30B9 0  0663                 DC      A540      BSI,ECO+Z LONG    BB409960
                            *                     *FORM            BB409970
                            * 8001   N/A    N/A   N/A   N/A   C+O AFTER LDS BB409980
                            * 8001   N/A    N/A   N/A   N/A   C  AFTER BSI  BB409990
                            * BSI DID NOT CLEAR OVERFLOW          BB410000
                            *                                     BB410010
                            *                                     BB410020
  30BA 0  06B7                 DC      A544      BSI,Z- LONG FORM  BB410030
                            * 0002   N/A    N/A   N/A   N/A   N/A  BB410040
                            * BSI DID NOT BRANCH - SHOULD HAVE    BB410050
                            *                                     BB410060
                            *                                     BB410070
  30BB 0  06B7                 DC      A544      BSI,Z- LONG FORM  BB410080
                            * 0002   N/A    N/A   N/A   N/A   N/A  BB410090
                            * BSI SKIPPED-SHOULD BRANCH           BB410100
                            *                                     BB410110
                            *                                     BB410120
  30BC 0  069C                 DC      A546      BSI,Z LONG FORM   BB410130
                            * 0000   N/A    N/A   N/A   N/A   N/A  BB410140
                            * BSI BRANCHED-SHOULD NOT             BB410150
                            *                                     BB410160
                            *                                     BB410170
  30BD 0  069C                 DC      A546      BSI,Z LONG FORM   BB410180
                            * 0000   N/A    N/A   N/A   N/A   N/A  BB410190
                            * BSI SKIPPED-SHOULD NOT      U       BB410200
                            *                                     BB410210
                            *                                     BB410220
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PROCESSOR-CONTROLLER FUNCTION TEST

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****************************************************************  BB410230
            ADDRESS         *                                     BB410240
            OF              *                                     BB410250
  B-REG     ROUTINE         * A-REG Q-REG  XR-1  XR-2  XR-3  STATUS BB410260
****************************************************************  BB410270
  30BE 0  06AF                 DC      A548      BSI,- LONG FORM   BB410280
                            * 8001   N/A    N/A   N/A   N/A   N/A  BB410290
                            * BSI SKIPPED-SHOULD NOT             BB410300
                            *                                     BB410310
                            *                                     BB410320
  30BF 0  06AF                 DC      A548      BSI,- LONG FORM   BB410330
                            * 8001   N/A    N/A   N/A   N/A   N/A  BB410340
                            * BSI BRANCHED-SHOULD NOT             BB410350
                            *                                     BB410360
  30C0 0  06C1                 DC      A54A      BSI,+ LONG FORM   BB410370
                            * 0002   N/A    N/A   N/A   N/A   N/A  BB410380
                            * BSI SKIPPED-SHOULD NOT             BB410390
                            *                                     BB410400
                            *                                     BB410410
  30C1 0  06C1                 DC      A54A      BSI,+ LONG FORM   BB410420
                            * 0002   N/A    N/A   N/A   N/A   N/A  BB410430
                            * BSI BRANCHED-SHOULD NOT             BB410440
                            *                                     BB410450
                            *                                     BB410460
  30C2 0  06D3                 DC      A54C      BSI,E LONG FORM   BB410470
                            * 0002   N/A    N/A   N/A   N/A   N/A  BB410480
                            * BSI SKIPPED-SHOULD NOT             BB410490
                            *                                     BB410500
                            *                                     BB410510
  30C3 0  06D3                 DC      A54C      BSI,E LONG FORM   BB410520
                            * 0002   N/A    N/A   N/A   N/A   N/A  BB410530
                            * BSI BRANCHED-SHOULD NOT             BB410540
                            *                                     BB410550
                            *                                     BB410560
  30C4 0  06E5                 DC      A54E      BSI,C LONG FORM   BB410570
                            * N/A    N/A    N/A   N/A   N/A   C    BB410580
                            * BSI SKIPPED-SHOULD NOT             BB410590
                            *                                     BB410600
                            *                                     BB410610
  30C5 0  06E5                 DC      A54E      BSI,C LONG FORM   BB410620
                            * N/A    N/A    N/A   N/A   N/A   C    BB410630
                            * BSI BRANCHED SHOULD NOT            BB410640
                            *                                     BB410650
                            *                                     BB410660
  30C6 0  06F7                 DC      A54F      BSI,O LONG FORM   BB410670
                            * N/A    N/A    N/A   N/A   N/A   O    BB410680
                            * BSI SKIPPED-SHOULD NOT             BB410690
                            *                                    ,BB410700
                            *                                     BB410710
  30C7 0  06F7                 DC      A54F      BSI,O LONG FORM   BB410720
                            * N/A    N/A    N/A   N/A   N/A   O    BB410730
                            * BSI BRANCHED-SHOULD NOT            BB410740
                            *                                     BB410750
                            *                                     BB410760
  30C8 0  070F                 DC      A580      LDD              BB410770
                            * 0000   0000   N/A   N/A   N/A   N/A  BB410780
                            * ACCUM NOT EQUAL 0000               BB410790
                            *                                     BB410800
                            *                                     BB410810
  30C9 0  070F                 DC      A580      LDD + RTE 16     BB410820
                            * 0000   0000   N/A   N/A   N/A   N/A AFTER LDD    BB410830
                            * 0000   0000   N/A   N/A   N/A   N/A AFTER RTE 16 BB410840
                            * ACCUM NOT EQUAL 0000-INDICATING Q REG FAILED    BB410850
                            *                                     BB410860
                            *                                     BB410870
  30CA 0  0721                 DC      A584      LDD              BB410880
                            * FFFF   FFFF   N/A   N/A   N/A   N/A  BB410890
                            * ACCUM NOT EQUAL FFFF               BB410900
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******************************************************************** 8B410910
          ADDRESS        *                                          8B410920
             OF          *                                          8B410930
B-REG   ROUTINE          * A-REG Q-REG  XR-1  XR-2  XR-3  STATUS     8B410940
********************************************************************  8B410950
30CB 0  0721               DC        A584       LDD + RTE 16         8B410960
                         * FFFF    FFFF    N/A   N/A   N/A  N/A AFTER LDD      8B410970
                         * FFFF    FFFF    N/A   N/A   N/A  N/A AFTER RTE 16   8B410980
                         * ACCUM NOT EQUAL FFFF-INDICATING Q REG FAILED        8B410990
                         *                                          8B411000
                         *                                          8B411010
30CC 0  0735               DC        A588       LDD ODD ADDRESS      8B411020
                         * 0000    0000    N/A   N/A   N/A   N/A     8B411030
                         * ACCUM NOT EQUAL 0000                     8B411040
                         *                                          8B411050
                         *                                          8B411060
30CD 0  0735               DC        A588       LDD-ODD ADDRESS      8B411070
                         *                       * + RTE 16          8B411080
                         * 0000    0000    N/A   N/A   N/A  N/A AFTER LDD      8B411090
                         * 0000    0000    N/A   N/A   N/A  N/A AFTER RTE 16   8B411100
                         * ACCUM NOT EQUAL 0000-INDICATING Q REG FAILED        8B411110
                         *                                          8B411120
                         *                                          8B411130
30CE 0  074C               DC        A5C0       STD                 8B411140
                         * 0000    0000    N/A   N/A   N/A   N/A     8B411150
                         * USING STD-ACCUM NOT STORED IN LOCATION EA 8B411160
                         *                                          8B411170
                         *                                          8B411180
30CF 0  074C               DC        A5C0       STD                 8B411190
                         * 0000    0000    N/A   N/A   N/A   N/A     8B411200
                         * USING STD-Q REG NOT STORED IN LOCATION EA+1 8B411210
                         *                                          8B411220
                         *                                          8B411230
30D0 0  0760               DC        A5C4       STD                 8B411240
                         * FFFF    FFFF    N/A   N/A   N/A   N/A     8B411250
                         * USING STD-ACCUM NOT STORED IN LOCATION EA 8B411260
                         *                                          8B411270
                         *                                          8B411280
30D1 0  0760               DC        A5C4       STD                 8B411290
                         * FFFF    FFFF    N/A   N/A   N/A   N/A     8B411300
                         * USING STD-Q REG NOT STORED IN LOCATION EA+1 8B411310
                         *                                          8B411320
                         *                                          8B411330
30D2 0  0779               DC        A5C8       STD ODD ADRESS       8B411340
                         * 0000    0000    N/A   N/A   N/A   N/A     8B411350
                         * STD USING ODD ADDRESS-ACCUM NOT STORED IN EA 8B411360
                         *                                          8B411370
                         *                                          8B411380
30D3 0  0779               DC        A5C8       STD-ODD ADDRESS      8B411390
                         * 0000    0000    N/A   N/A   N/A   N/A     8B411400
                         * STD USING ODD ADDRESS-ACCUM NOT STORED    8B411410
                         * IN EA+1                                   8B411420
                         *                                          8B411430
                         *                                          8B411440
30D4 0  079F               DC        A600       LDX 1                8B411450
                         * N/A     N/A     N/A   N/A   N/A   N/A     8B411460
                         * TAG REG BIT 7 WILL NOT SET               8B411470
                         *                                          8B411480
                         *                                          8B411490
30D5 0  07A8               DC        A602       LDX 2                8B411500
                         * N/A     N/A     N/A   N/A   N/A   N/A     8B411510
                         * TAG REG BIT 6 WILL NOT SET               8B411520
                         *                                          8B411530
                         *                                          8B411540
30D6 0  07B1               DC        A604       LDX 1                8B411550
                         * N/A     N/A     0000  N/A   N/A   N/A     8B411560
                         * INDEX REG 1 NOT EQUAL 0000               8B411570
                         *                                          8B411580
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******************************************************************** 8B411590
          ADDRESS        *                                          8B411600
             OF          *                                          8B411610
B-REG   ROUTINE          * A-REG Q-REG  XR-1  XR-2  XR-3  STATUS     8B411620
********************************************************************  8B411630
30D7 0  078D               DC        A606       LDX 2                8B411640
                         * N/A     N/A     N/A   0000  N/A   N/A     8B411650
                         * INDEX REG 2 NOT EQUAL 0000               8B411660
                         *                                          8B411670
                         *                                          8B411680
30D8 0  07CA               DC        A608       LDX 3                8B411690
                         * N/A     N/A     N/A   N/A   0000  N/A     8B411700
                         * INDEX REG 3 NOT EQUAL 0000               8B411710
                         *                                          8B411720
                         *                                          8B411730
30D9 0  07D7               DC        A60A       LDX 1                8B411740
                         * N/A     N/A     FFFF  N/A   N/A   N/A     8B411750
                         * INDEX REG 1 NOT EQUAL FFFF               8B411760
                         *                                          8B411770
                         *                                          8B411780
30DA 0  07E4               DC        A60C       LDX 2                8B411790
                         * N/A     N/A     N/A   FFFF  N/A   N/A     8B411800
                         * INDEX REG 2 NOT EQUAL FFFF               8B411810
                         *                                          8B411820
                         *                                          8B411830
30DB 0  07F1               DC        A60E       LDX 3                8B411840
                         * N/A     N/A     N/A   N/A   FFFF  N/A     8B411850
                         * INDEX REG 3 NOT EQUAL FFFF               8B411860
                         *                                          8B411870
                         *                                          8B411880
30DC 0  07FE               DC        B600       LDX 1 LONG FORM      8B411890
                         * N/A     N/A     0001  N/A   N/A   N/A     8B411900
                         * INDEX REG 1 NOT EQUAL 0001               8B411910
                         *                                          8B411920
                         *                                          8B411930
30DD 0  080C               DC        B602       LDX 3 INDIRECT       8B411940
                         * N/A     N/A     N/A   N/A   FFFF  N/A     8B411950
                         * INDEX REG 3 NOT EQUAL FFFF               8B411960
                         *                                          8B411970
                         *                                          8B411980
30DE 0  0820               DC        A640       STX                 8B411990
                         * N/A     N/A     N/A   N/A   N/A   N/A     8B412000
                         * STX WITH NO TAG DID NOT STORE I-CTR CORRECT 8B412010
                         *                                          8B412020
                         *                                          8B412030
30DF 0  0837               DC        A642       STX 1                8B412040
                         * N/A     N/A     0000  N/A   N/A   N/A     8B412050
                         * INDEX REG 1 WAS NOT STORED BY STX        8B412060
                         *                                          8B412070
                         *                                          8B412080
30E0 0  0844               DC        A644       STX 2                8B412090
                         * N/A     N/A     N/A   0000  N/A   N/A     8B412100
                         * INDEX REG 2 NOT STORED BY STX            8B412110
                         *                                          8B412120
                         *                                          8B412130
30E1 0  0851               DC        A646       STX 3                8B412140
                         * N/A     N/A     N/A   N/A   0000  N/A     8B412150
                         * INDEX REG 3 NOT STORED BY STX            8B412160
                         *                                          8B412170
                         *                                          8B412180
30E2 0  085E               DC        A648       STX 1                8B412190
                         * N/A     N/A     FFFF  N/A   N/A   N/A     8B412200
                         * INDEX REG 1 NOT STORED BY STX            8B412210
                         *                                          8B412220
                         *                                          8B412230
30E3 0  086C               DC        A64A       STX 2                8B412240
                         * N/A     N/A     N/A   FFFF  N/A   N/A     8B412250
                         * INDEX REG 2 NOT STORED BY STX            8B412260
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*********************************************************** 8B412270
        ADDRESS    *                                        8B412280
        OF         *                                        8B412290
B-REG   ROUTINE    * A-REG G-REG  XR-1  XR-2  XR-3  STATUS  8B412300
*********************************************************** 8B412310
                   *                                        8B412320
30E4 0  087A            DC     A64C        STX 3            8B412330
                   * N/A   N/A   N/A   N/A   FFFF  N/A      8B412340
                   * INDEX REG 3 NOT STORED BY STX          8B412350
                   *                                        8B412360
                   *                                        8B412370
30E5 0  08EC            DC     A680        ADD              8B412380
                   * FFFF  N/A   N/A   N/A   N/A   C  AFTER LD+LDS  8B412390
                   * FFFF  N/A   N/A   N/A   N/A   C  AFTER A       8B412400
                   * ADD FFFF + 0000 TURNED ON OVERFLOW     8B412410
                   *                                        8B412420
                   *                                        8B412430
30E6 0  08EC            DC     A680        ADD              8B412440
                   * FFFF  N/A   N/A   N/A   N/A   N/A AFTER LD     8B412450
                   * FFFF  N/A   N/A   N/A   N/A   N/A AFTER A      8B412460
                   * ADD FFFF + 0000 FAILED TO EQUAL FFFF   8B412470
                   *                                        8B412480
                   *                                        8B412490
30E7 0  0901            DC     A684        ADD              8B412500
                   * FFFF  N/A   N/A   N/A   N/A   OFF AFTER LD+LDS 8B412510
                   * 0000  N/A   N/A   N/A   N/A   C  AFTER A       8B412520
                   * ADD FFFF + 0001 DID NOT TURN ON CARRY  8B412530
                   *                                        8B412540
                   *                                        8B412550
30E8 0  0901            DC     A684        ADD              8B412560
                   * FFFF  N/A   N/A   N/A   N/A   N/A AFTER LD+LDS 8B412570
                   * 0000  N/A   N/A   N/A   N/A   N/A AFTER A      8B412580
                   * ADD FFFF + 0001 DID NOT EQUAL 0000     8B412590
                   *                                        8B412600
                   *                                        8B412610
30E9 0  0914            DC     A688        ADD              8B412620
                   * FFFF  N/A   N/A   N/A   N/A   OFF AFTER LD+LDS 8B412630
                   * FFFF  N/A   N/A   N/A   N/A   C  AFTER A       8B412640
                   * ADD FFFF + FFFF DID NOT TURN ON CARRY  8B412650
                   *                                        8B412660
                   *                                        8B412670
30EA 0  0914            DC     A688        ADD              8B412680
                   * FFFF  N/A   N/A   N/A   N/A   N/A AFTER LD+LDS 8B412690
                   * FFFF  N/A   N/A   N/A   N/A   N/A AFTER A      8B412700
                   * ADD FFFF + FFFF DID NOT EQUAL FFFE     8B412710
                   *                                        8B412720
                   *                                        8B412730
30EB 0  0928            DC     A68C        ADD              8B412740
                   * 4000  N/A   N/A   N/A   N/A   OFF AFTER LD     8B412750
                   * 8000  N/A   N/A                 O  AFTER A     8B412760
                   * ADD 4000 + 4000 DID NOT TURN ON OVERFLOW 8B412770
                   *                                        8B412780
                   *                                        8B412790
30EC 0  0928            DC     A68C        ADD              8B412800
                   * 4000  N/A   N/A   N/A   N/A   N/A      8B412810
                   * ADD 4000 + 4000 DID NOT EQUAL 8000     8B412820
                   *                                        8B412830
                   *                                        8B412840
30ED 0  093C            DC     B680        ADD              8B412850
                   * 8000  N/A   N/A   N/A   N/A   N/A AFTER LD     8B412860
                   * 0000  N/A   N/A   N/A   N/A   N/A AFTER A      8B412870
                   * ADD 8000 + 8000 NOT EQUAL 0000         8B412880
                   *                                        8B412890
                   *                                        8B412900
30EE 0  093C            DC     B680        ADD              8B412910
                   * 8000  N/A   N/A   N/A   N/A   OFF AFTER LD     8B412920
                   * 0000  N/A                      C+0 AFTER A     8B412930
                   * ADD 8000 + 8000 DID NOT TURN ON OVERFLOW 8B412940
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*********************************************************** 8B412950
        ADDRESS    *                                        8B412960
        OF         *                                        8B412970
B-REG   ROUTINE    * A-REG G-REG  XR-1  XR-2  XR-3  STATUS  8B412980
*********************************************************** 8B412990
                   *                                        8B413000
                   *                                        8B413010
30EF 0  093C            DC     B680        ADD              8B413020
                   * 8000  N/A   N/A   N/A   N/A   OFF AFTER LD     8B413030
                   * 0000  N/A   N/A   N/A   N/A   C+0 AFTER A      8B413040
                   * ADD 8000 + 8000 DID NOT TURN ON CARRY  8B413050
                   *                                        8B413060
                   *                                        8B413070
30F0 0  0964            DC     A6C0        LDX 1            8B413080
                   * N/A   N/A   FFF4  N/A   N/A   N/A      8B413090
                   * INDEX REG 1 WAS NOT LOADED EQUAL FFF4  8B413100
                   *                                        8B413110
                   *                                        8B413120
30F1 0  0964            DC     A6C0        LD 1             8B413130
                   * N/A   N/A   FFF4  N/A   N/A   N/A      8B413140
                   * A LOAD INSTR INDEXED BY INDEX REG 1    8B413150
                   * LOADED THE WRONG LOCATION              8B413160
                   *                                        8B413170
                   *                                        8B413180
30F2 0  097C            DC     A6C2        LDX 2            8B413190
                   * N/A   N/A   N/A   0004  N/A   N/A      8B413200
                   * INDEX REG 2 NOT LOADED EQUAL 0004      8B413210
                   *                                        8B413220
                   *                                        8B413230
30F3 0  097C            DC     A6C2        LD 2             8B413240
                   * N/A   N/A   N/A   0004  N/A   N/A      8B413250
                   * A LOAD INSTR INDEXED BY INDEX REG 2    8B413260
                   * LOADED THE WRONG LOCATION              8B413270
                   *                                        8B413280
                   *                                        8B413290
30F4 0  0994            DC     A6C4        LDX 3            8B413300
                   * N/A   N/A   N/A   N/A   0000  N/A      8B413310
                   * INDEX REG 3 NOT LOADED EQUAL 0000      8B413320
                   *                                        8B413330
                   *                                        8B413340
30F5 0  0994            DC     A6C4        LD 3             8B413350
                   * N/A   N/A   N/A   N/A   0000  N/A      8B413360
                   * A LOAD INSTR INDEXED BY INDEX REG 3    8B413370
                   * LOADED THE WRONG LOCATION              8B413380
                   *                                        8B413390
                   *                                        8B413400
30F6 0  09AB            DC     A6C6        LDX 3            8B413410
                   * N/A   N/A   N/A   N/A   0001  N/A      8B413420
                   * INDEX REG 3 NOT EQUAL 0001             8B413430
                   *                                        8B413440
                   *                                        8B413450
30F7 0  09AB            DC     A6C6        LD 3 LONG FORM   8B413460
                   * N/A   N/A   N/A   N/A   0001  N/A      8B413470
                   * A LONG FORM LOAD INDEXED BY INDEX REG 3 8B413480
                   * LOADED THE WRONG LOCATION              8B413490
                   *                                        8B413500
                   *                                        8B413510
30F8 0  09C3            DC     A6C8        LDX 3            8B413520
                   * N/A   N/A   N/A   N/A   FFFF  N/A      8B413530
                   * INDEX REG 3 NOT EQUAL FFFF             8B413540
                   *                                        8B413550
                   *                                        8B413560
30F9 0  09C3            DC     A6C8        LD 3 INDIRECT    8B413570
                   * N/A   N/A   N/A   N/A   FFFF  N/A      8B413580
                   * AN INDIRECT LOAD INDEXED BY INDEX REG 3 8B413590
                   * LOADED THE WRONG LOCATION              8B413600
                   *                                        8B413610
                   *                                        8B413620
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*****************************************************************  8B413630
       ADDRESS      *                                             8B413640
          OF        *                                             8B413650
B-REC   ROUTINE     * A-REG Q-REG  XR-1  XR-2  XR-3  STATUS       8B413660
*****************************************************************  8B413670
30FA 0  0A48              DC      A700         SUB                 8B413680
                   * 0000   N/A   N/A   N/A   N/A   N/A AFTER LD   8B413690
                   * FFFF   N/A   N/A   N/A   N/A   N/A AFTER S    8B413700
                   * SUB 0001 FORM 0000 DID NOT EQUAL FFFF        8B413710
                   *                                              8B413720
                   *                                              8B413730
30FB 0  0A48              DC      A700         SUB                 8B413740
                   * 0000   N/A   N/A   N/A   N/A   OFF AFTER LD   8B413750
                   * FFFF   N/A   N/A   N/A   N/A   C   AFTER S    8B413760
                   * SUB 0001 FROM 0000 DID NOT SET CARRY         8B413770
                   *                                              8B413780
                   *                                              8B413790
30FC 0  0A5F              DC      A704         SUB                 8B413800
                   * 0000   N/A   N/A   N/A   N/A   N/A AFTER LD   8B413810
                   * 0001   N/A   N/A   N/A   N/A   N/A AFTER S    8B413820
                   * SUB FFFF FROM 0000 DID NOT EQUAL 0001        8B413830
                   *                                              8B413840
                   *                                              8B413850
30FD 0  0A5F              DC      A704         SUB                 8B413860
                   * 0000   N/A   N/A   N/A   N/A   OFF AFTER LD   8B413870
                   * 0001   N/A   N/A   N/A   N/A   C   AFTER S    8B413880
                   * SUB FFFF FROM 0000 DID NOT SET CARRY         8B413890
                   *                                              8B413900
                   *                                              8B413910
30FE 0  0A76              DC      A708         SUB                 8B413920
                   * 8000   N/A   N/A   N/A   N/A   N/A AFTER LD   8B413930
                   * 7FFF   N/A   N/A   N/A   N/A   N/A AFTER S    8B413940
                   * SUB 0001 FROM 8000 DID NOT EQUAL 7FFF        8B413950
                   *                                              8B413960
                   *                                              8B413970
30FF 0  0A76              DC      A708         SUB                 8B413980
                   * 8000   N/A   N/A   N/A   N/A   OFF AFTER LD   8B413990
                   * 0001   N/A   N/A   N/A   N/A   C   AFTER CARRY 8B414000
                   * AND OVERFLOW CONDITION HAD BEEN LOADED INTO  8B414010
                   * ACCUMULATOR AS A NUMBER                      8B414020
                   * SUB 0001 FROM 8000 DID NOT TURN ON OVERFLOW  8B414030
                   *                                              8B414040
                   *                                              8B414050
3100 0  0A80              DC      A70C         SUB                 8B414060
                   * 0000   N/A   N/A   N/A   N/A   N/A AFTER LD   8B414070
                   * 8000   N/A   N/A   N/A   N/A   N/A AFTER S    8B414080
                   * SUB 8000 FROM 0000 DID NOT EQUAL 8000        8B414090
                   *                                              8B414100
                   *                                              8B414110
3101 0  0A8D              DC      A70C         SUB                 8B414120
                   * 0000   N/A   N/A   N/A   N/A   OFF AFTER LD   8B414130
                   * 8000   N/A   N/A   N/A   N/A   C+O AFTER S    8B414140
                   * SUB 8000 FROM 0000 DID NOT TURN ON OVERFLOW  8B414150
                   *                                              8B414160
                   *                                              8B414170
3102 0  0A8D              DC      A70C         SUB                 8B414180
                   * 0000   N/A   N/A   N/A   N/A   OFF AFTER LD   8B414190
                   * 8000   N/A   N/A   N/A   N/A   C+O AFTER S    8B414200
                   * SUB 8000 FROM 0000 DID NOT TURN ON CARRY     8B414210
                   *                                              8B414220
                   *                                              8B414230
3103 0  0A88              DC      A740        AO-0000 0000         8B414240
                   * FFFF   FFFF   N/A   N/A   N/A   N/A AFTER LDD 8B414250
                   * FFFF   FFFF   N/A   N/A   N/A   N/A AFTER AD  8B414260
                   * ACCUM NOT EQUAL FFFF                         8B414270
                   *                                              8B414280
                   *                                              8B414290
                   *                                              8B414300
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*****************************************************************  8B414310
       ADDRESS      *                                             8B414320
          OF        *                                             8B414330
8-REG   ROUTINE     * A-REG Q-REG  XR-1  XR-2  XR-3  STATUS       8B414340
*****************************************************************  8B414350
3104 0  0AB8              DC      A740        AO-0000 0000         8B414360
                   * FFFF   FFFF   N/A   N/A   N/A   N/A AFTER AOO 8B414370
                   * FFFF   FFFF   N/A   N/A   N/A   N/A AFTER RTE 8B414380
                   * Q REG NOT EQUAL FFFF                         8B414390
                   *                                              8B414400
                   *                                              8B414410
3105 0  0AB8              DC      A740        AO-0000 0000         8B414420
                   * FFFF   FFFF   N/A   N/A   N/A   OFF AFTER LOO 8B414430
                   * FFFF   FFFF   N/A   N/A   N/A   OFF AFTER RTE 8B414440
                   * OVERFLOW SET SHOULD NOT BE                   8B414450
                   *                                              8B414460
                   *                                              8B414470
3106 0  0AB8              DC      A740        AO-0000 0000         8B414480
                   * FFFF   FFFF   N/A   N/A   N/A   OFF AFTER LDO 8B414490
                   * FFFF   FFFF   N/A   N/A   N/A   OFF AFTER RTE 8B414500
                   * CARRY SET-SHOULD NOT BE                      8B414510
                   *                                              8B414520
                   *                                              8B414530
3107 0  0AE7              DC      A746        AO-FFFF FFFF         8B414540
                   * 0000   0001   N/A   N/A   N/A   N/A AFTER LOO 8B414550
                   * 0000   0000   N/A   N/A   N/A   N/A AFTER AO  8B414560
                   * ACCUM NOT EQUAL 0000                         8B414570
                   *                                              8B414580
                   *                                              8B414590
3108 0  0AE7              DC      A746        AO-FFFF FFFF         8B414600
                   * 0000   0001   N/A   N/A   N/A   N/A AFTER LDD 8B414610
                   * 0000   0000   N/A   N/A   N/A   N/A AFTER AO  8B414620
                   * Q REG NOT EQUAL 0000                         8B414630
                   *                                              8B414640
                   *                                              8B414650
3109 0  0AE7              DC      A746        AO-FFFF FFFF         8B414660
                   * 0000   0001   N/A   N/A   N/A   OFF AFTER LOO 8B414670
                   * 0000   0000   N/A   N/A   N/A   C   AFTER AD  8B414680
                   * OVERFLOW SET-SHOULD NOT BE                   8B414690
                   *                                              8B414700
                   *                                              8B414710
310A 0  0AE7              DC      A746        AO-FFFF FFFF         8B414720
                   * 0000   0001   N/A   N/A   N/A   OFF AFTER LOO 8B414730
                   * 0000   0000   N/A   N/A   N/A   C   AFTER AO  8B414740
                   * CARRY NOT SET-SHOULD BE                      8B414750
                   *                                              8B414760
                   *                                              8B414770
310B 0  0B14              DC      A74C        AO-FFFF FFFF         8B414780
                   * FFFF   FFFF   N/A   N/A   N/A   N/A AFTER LOO 8B414790
                   * FFFF   FFFE   N/A   N/A   N/A   N/A AFTER AO  8B414800
                   * ACCUM NOT EQUAL FFFF                         8B414810
                   *                                              8B414820
                   *                                              8B414830
310C 0  0B14              DC      A74C        AO-FFFF FFFF         8B414840
                   * FFFF   FFFF   N/A   N/A   N/A   N/A AFTER LDO 8B414850
                   * FFFF   FFFE   N/A   N/A   N/A   N/A AFTER AD  8B414860
                   * Q REG NOT EQUAL FFFE                         8B414870
                   *                                              8B414880
                   *                                              8B414890
310D 0  0B14              DC      A74C        AO-FFFF FFFF         8B414900
                   * FFFF   FFFF   N/A   N/A   N/A   OFF AFTER LOO 8B414910
                   * FFFF   FFFE   N/A   N/A   N/A   C   AFTER AO  8B414920
                   * OVERFLOW ON-SHOULD NOT BE                    8B414930
                   *                                              8B414940
                   *                                              8B414950
                   *                                              8B414960
                   *                                              8B414970
                   *                                              8B414980
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****************************************************************** 8B414990
         ADDRESS     *                                            8B415000
            OF        *                                           8B415010
B-REG    ROUTINE     * A-REG  Q-REG  XR-1  XR-2  XR-3  STATUS      8B415020
****************************************************************** 8B415030
310E 0  0B14              OC      A74C      AD-FFFF FFFF           8B415040
                 * FFFF   FFFF   N/A   N/A   N/A   OFF AFTER LOD   8B415050
                 * FFFF   FFFE   N/A   N/A   N/A    C  AFTER AO    8B415060
                 * CARRY NOT ON-SHOULD BE                          8B415070
                 *                                                 8B415080
                 *                                                 8B415090
310F 0  083E              OC      B742      AD-FFFF FFFF           8B415100
                 * FFFF   7FFF   N/A   N/A   N/A   N/A AFTER LOD   8B415110
                 * FFFF   7FFE   N/A   N/A   N/A   N/A AFTER AO    8B415120
                 * ACCUM NOT EQUAL FFFF                            8B415130
                 *                                                 8B415140
                 *                                                 8B415150
3110 0  083E              OC      B742      AD-FFFF FFFF           8B415160
                 * FFFF   7FFF   N/A   N/A   N/A   N/A AFTER LDD   8B415170
                 * FFFF   7FFE   N/A   N/A   N/A   N/A AFTER AD    8B415180
                 * Q REG NOT EQUAL 7FFE                            8B415190
                 *                                                 8B415200
                 *                                                 8B415210
3111 0  0B3E              OC      B742      AO-FFFF FFFF           8B415220
                 * FFFF   7FFF   N/A   N/A   N/A   OFF AFTER LDO   8B415230
                 * FFFF   7FFE   N/A   N/A   N/A    C  AFTER AD    8B415240
                 * OVERFLOW SET-SHOULD NOT BE                      8B415250
                 *                                                 8B415260
                 *                                                 8B415270
3112 0  0B3E              DC      B742      AD-FFFF FFFF           8B415280
                 * FFFF   7FFF   N/A   N/A   N/A   OFF AFTER LDD   8B415290
                 * FFFF   7FFE   N/A   N/A   N/A    C  AFTER AD    8B415300
                 * CARRY NOT SET-SHOULD BE                         8B415310
                 *                                                 8B415320
                 *                                                 8B415330
3113 0  0B6B              OC      8747      AD-0001 DDO LDC        8B415340
                 * 0000   0001   N/A   N/A   N/A   N/A AFTER LDO   8B415350
                 * 0001   0002   N/A   N/A   N/A   N/A AFTER AD    8B415360
                 * ACCUM NOT EQUAL 0001                            8B415370
                 *                                                 8B415380
                 *                                                 8B415390
3114 0  0B68              DC      8747      AO-0001 DOD LDC        8B415400
                 * 0000   0001   N/A   N/A   N/A   N/A AFTER LDD   8B415410
                 * 0001   0002   N/A   N/A   N/A   N/A AFTER AO    8B415420
                 * Q REG NOT EQUAL 0002                            8B415430
                 *                                                 8B415440
                 *                                                 8B415450
3115 0  0BBC              DC      A780      SO-0000 0001           8B415460
                 * 0000   0000   N/A   N/A   N/A   N/A AFTER LDD   8B415470
                 * FFFF   FFFF   N/A   N/A   N/A   N/A AFTER SD    8B415480
                 * ACCUM NOT EQUAL FFFF                            8B415490
                 *                                                 8B415500
                 *                                                 8B415510
3116 0  0BBC              DC      A780      SO-000C 0001           8B415520
                 * 0000   0000   N/A   N/A   N/A   N/A AFTER LDO   8B415530
                 * FFFF   FFFF   N/A   N/A   N/A   N/A AFTER SD    8B415540
                 * Q REG NOT EQUAL FFFF                            8B415550
                 *                                                 8B415560
                 *                                                 8B415570
3117 0  088C              DC      A780      SD-0000 0001           8B415580
                 * 0000   0000   N/A   N/A   N/A   OFF AFTER LOD   8B415590
                 * FFFF   FFFF   N/A   N/A   N/A    C  AFTER SD    8B415600
                 * OVERFLOW ON-SHOULD NOT BE                       8B415610
                 *                                                 8B415620
                 *                                                 8B415630
                 *                                                 8B415640
                 *                                                 8B415650
                 *                                                 8B415660
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****************************************************************** 8B415670
         ADDRESS     *                                            8B415680
            OF        *                                           8B415690
B-REG    ROUTINE     * A-REG  Q-REG  XR-1  XR-2  XR-3  STATUS      8B415700
****************************************************************** 8B415710
3118 0  0B8C              OC      A780      SD-0000 0001           8B415720
                 * 0000   0000   N/A   N/A   N/A   OFF AFTER LOD   8B415730
                 * FFFF   FFFF   N/A   N/A   N/A    C  AFTER SD    8B415740
                 * CARRY NOT ON-SHOULD BE                          8B415750
                 *                                                 8B415760
                 *                                                 8B415770
3119 0  0BB6              DC      A786      SD-FFFF FFFF           8B415780
                 * 0000   0000   N/A   N/A   N/A   N/A AFTER LDD   8B415790
                 * 0000   0001   N/A   N/A   N/A   N/A AFTER SD    8B415800
                 * ACCUM NOT EQUAL TC 0000                         8B415810
                 *                                                 8B415820
                 *                                                 8B415830
311A 0  0BB6              OC      A786      SD-FFFF FFFF           8B415840
                 * 0000   0000   N/A   N/A   N/A   N/A AFTER LDO   8B415850
                 * 0000   0001   N/A   N/A   N/A   N/A AFTER SD    8B415860
                 * Q REG NOT EQUAL 0001                            8B415870
                 *                                                 8B415880
                 *                                                 8B415890
311B 0  08CB              DC      A78A      SO-FFFF FFFF           8B415900
                 * 0000   C000   N/A   N/A   N/A   N/A AFTER LDD   8B415910
                 * 0000   C001   N/A   N/A   N/A   N/A AFTER SO    8B415920
                 * ACCUM NOT EQUAL 0000                            8B415930
                 *                                                 8B415940
                 *                                                 8B415950
311C 0  0BCB              OC      A78A      SD-FFFF FFFF           8B415960
                 * 0000   C000   N/A   N/A   N/A   N/A AFTER LDD   8B415970
                 * 0000   C001   N/A   N/A   N/A   N/A AFTER SD    8B415980
                 * Q REG NOT EQUAL C001                            8B415990
                 *                                                 8B416000
                 *                                                 8B416010
311D 0  08DF              OC      A78E      SD-FFFF DDD LDC        8B416020
                 * 0000   0000   N/A   N/A   N/A   N/A AFTER LDD   8B416030
                 * 0000   0001   N/A   N/A   N/A   N/A AFTER SD    8B416040
                 * ACCUM NOT EQUAL 0000                            8B416050
                 *                                                 8B416060
                 *                                                 8B416070
311E 0  08DF              DC      A78E      SD-FFFF DDO LDC        8B416080
                 * 0000   0000   N/A   N/A   N/A   N/A AFTER LOD   8B416090
                 * 0000   0001   N/A   N/A   N/A   N/A AFTER SO    8B416100
                 * Q REG NOT EQUAL 0001                            8B416110
                 *                                                 8B416120
                 *                                                 8B416130
311F 0  0C01              OC      A7C0      MULT-2AAA              8B416140
                 * 5555   N/A    N/A   N/A   N/A   N/A AFTER LO    8B416150
                 * 0E38   9C72   N/A   N/A   N/A   N/A AFTER M     8B416160
                 * ACCUM NOT EQUAL 0E3B                           8B416170
                 *                                                 8B416180
                 *                                                 8B416190
3120 0  0C01              OC      A7C0      MULT-2AAA              8B416200
                 * 5555   N/A    N/A   N/A   N/A   N/A AFTER LO    8B416210
                 * 0E38   9C72   N/A   N/A   N/A   N/A AFTER M     8B416220
                 * Q REG NOT EQUAL 9C72                            8B416230
                 *                                                 8B416240
                 *                                                 8B416250
3121 0  0C16              DC      A7C4      MULT-FFFF              8B416260
                 * FFFF   N/A    N/A   N/A   N/A   N/A AFTER LO    8B416270
                 * 0000   0001   N/A   N/A   N/A   N/A AFTER M     8B416280
                 * ACCUM NOT EQUAL 0000                           8B416290
                 *                                                 8B416300
                 *                                                 8B416310
                 *                                                 8B416320
                 *                                                 8B416330
                 *                                                 8B416340
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**************************************************************** 88416350
        ADDRESS    *                                            88416360
          OF       *                                            88416370
B-REG   ROUTINE    * A-REG Q-REG  XR-1  XR-2  XR-3  STATUS       88416380
**************************************************************** 88416390
3122 0  OC16          DC    A7C4        MULT-FFFF                88416400
                  * FFFF  N/A   N/A   N/A   N/A   N/A AFTER LD   88416410
                  * 0000  0001  N/A   N/A   N/A   N/A AFTER M    88416420
                  * Q REG NOT EQUAL 0001                        88416430
                  *                                             88416440
                  *                                             88416450
3123 0  OC2A          DC    A7C8        MULT-FFFF                88416460
                  * 0000  N/A   N/A   N/A   N/A   N/A AFTER LD   88416470
                  * 0000  0000  N/A   N/A   N/A   N/A AFTER M    88416480
                  * ACCUM NOT EQUAL 0000                        88416490
                  *                                             88416500
                  *                                             88416510
3124 0  OC2A          DC    A7C8        MULT-FFFF                88416520
                  * 0000  N/A   N/A   N/A   N/A   N/A AFTER LD   88416530
                  * 0000  0000  N/A   N/A   N/A   N/A AFTER M    88416540
                  * Q REG NOT EQUAL 0000                        88416550
                  *                                             88416560
                  *                                             88416570
3125 0  OC30          DC    A7CC        MULT-0000                88416580
                  * FFFF  N/A   N/A   N/A   N/A   N/A AFTER LD   88416590
                  * 0000  0000  N/A   N/A   N/A   N/A AFTER M    88416600
                  * ACCUM NOT EQUAL 0000                        88416610
                  *                                             88416620
                  *                                             88416630
3126 0  OC30          DC    A7CC        MULT-0000                88416640
                  * FFFF  N/A   N/A   N/A   N/A   N/A AFTER LD   88416650
                  * 0000  0000  N/A   N/A   N/A   N/A AFTER M    88416660
                  * Q REG NOT EQUAL 0000                        88416670
                  *                                             88416680
                  *                                             88416690
3127 0  OC58          DC    A800        DVD-8000                 88416700
                  * 4000  7FFF  N/A   N/A   N/A   N/A AFTER LDD  88416710
                  * 8000  7FFF  N/A   N/A   N/A   N/A AFTER D    88416720
                  * ACCUM NOT EQUAL 8000                        88416730
                  *                                             88416740
                  *                                             88416750
3128 0  OC58          DC    A800        OVD-8000                 88416760
                  * 4000  7FFF  N/A   N/A   N/A   N/A AFTER LDD  88416770
                  * 8000  7FFF  N/A   N/A   N/A   N/A AFTER D    88416780
                  * Q REG NOT EQUAL 7FFF                        88416790
                  *                                             88416800
                  *                                             88416810
3129 0  OC58          DC    A800        DVO-8000                 88416820
                  * 4000  7FFF  N/A   N/A   N/A   OFF AFTER LDO  88416830
                  * 8000  7FFF  N/A   N/A   N/A   N/A AFTER D    88416840
                  * OVERFLOW ON-SHOULD NOT BE                   88416850
                  *                                             88416860
                  *                                             88416870
312A 0  OC58          OC    A800        DVD-8000                 88416880
                  * 4000  7FFF  N/A   N/A   N/A   OFF AFTER LDD  88416890
                  * 8000  7FFF  N/A   N/A   N/A   N/A AFTER D    88416900
                  * CARRY ON-SHOULD NOT BE                      88416910
                  *                                             88416920
                  *                                             88416930
312B 0  OC87          DC    A806        DVD-5555                 88416940
                  * 1C71  BBE3  N/A   N/A   N/A   N/A AFTER LDD  88416950
                  * 5555  2DAA  N/A   N/A   N/A   N/A AFTER D    88416960
                  * ACCUM NOT EQUAL 5555                        88416970
                  *                                             88416980
                  *                                             88416990
                  *                                             88417000
                  *                                             88417010
                                                                88417020
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**************************************************************** 88417030
        ADDRESS    *                                            88417040
          OF       *                                            88417050
B-REG   ROUTINE    * A-REG Q-REG  XR-1  XR-2  XR-3  STATUS       88417060
**************************************************************** 88417070
312C 0  OC87          OC    A806        DVD-5555                 88417080
                  * 1C71  BBE3  N/A   N/A   N/A   N/A AFTER LDO  88417090
                  * 5555  2DAA  N/A   N/A   N/A   N/A AFTER D    88417100
                  * Q REG NOT EQUAL 2DAA                        88417110
                  *                                             88417120
                  *                                             88417130
3120 0  OC87          DC    A806        DVD-5555                 88417140
                  * 1C71  BBE3  N/A   N/A   N/A   OFF AFTER LDD  88417150
                  * 5555  2DAA  N/A   N/A   N/A   N/A AFTER D    88417160
                  * OVERFLOW ON-SHOULD NOT BE                   88417170
                  *                                             88417180
                  *                                             88417190
312E 0  OC87          DC    A806        DVD-5555                 88417200
                  * 1C71  BBE3  N/A   N/A   N/A   OFF AFTER LDO  88417210
                  * 5555  2DAA  N/A   N/A   N/A   N/A AFTER D    88417220
                  * CARRY ON-SHOULD NOT BE                      88417230
                  *                                             88417240
                  *                                             88417250
312F 0  OC82          DC    A80C        DVO-0000                 88417260
                  * 0000  0001  N/A   N/A   N/A   OFF AFTER LDD  88417270
                  * N/A   N/A   N/A   N/A   N/A    0 AFTER D     88417280
                  * OVERFLOW NOT ON-SHOULD BE                   88417290
                  *                                             88417300
                  *                                             88417310
3130 0  OCBD          DC    A80E        OVD-0001                 88417320
                  * 4000  0000  N/A   N/A   N/A   OFF AFTER LDD  88417330
                  * N/A   N/A   N/A   N/A   N/A    0 AFTER D     88417340
                  * OVERFLOW NOT ON-SHOULD BE                   88417350
                  *                                             88417360
                  *                                             88417370
3131 0  OCC8          DC    B800        DVD-4000                 88417380
                  * A000  0000  N/A   N/A   N/A   OFF AFTER LDD  88417390
                  * N/A   N/A   N/A   N/A   N/A    0 AFTER D     88417400
                  * OVERFLOW NOT ON-SHOULD BE                   88417410
                  *                                             88417420
                  *                                             88417430
3132 0  OC03          OC    B802        DVD-8000                 88417440
                  * C000  0000  N/A   N/A   N/A   OFF AFTER LDD  88417450
                  * N/A   N/A   N/A   N/A   N/A    0 AFTER D     88417460
                  * OVERFLOW OFF--SHOULD BE ON                  88417470
                  *                                             88417480
                  *                                             88417490
3133 0  OCDE          DC    B804        DVD-0001                 88417500
                  * 0000  FFFF  N/A   N/A   N/A   OFF AFTER LDO  88417510
                  * N/A   N/A   N/A   N/A   N/A    0 AFTER D     88417520
                  * OVERFLOW OFF--SHOULD BE ON                  88417530
                  *                                             88417540
                  *                                             88417550
3134 0  OCE9          OC    B806        DVD-0001                 88417560
                  * FFFF  7FFF  N/A   N/A   N/A   OFF AFTER LDD  88417570
                  * N/A   N/A   N/A   N/A   N/A    C AFTER D     88417580
                  * OVERFLOW OFF--SHOULD BE ON                  88417590
                  *                                             88417600
                  *                                             88417610
3135 0  OD6A          DC    A840        MDX 1                    88417620
                  * N/A   N/A   0000  N/A   N/A   N/A AFTER LDX  88417630
                  * N/A   N/A   FFFF  N/A   N/A   N/A AFTER MDX 1 88417640
                  * INDEX REG 1 NOT EQUAL FFFF WHEN MD01F1E0     88417650
                  * BY MINUS 1                                  88417660
                  *                                             88417670
                  *                                             88417680
3136 0  OD78          DC    A842        MDX LONG FORM            88417690
                  * ADD +1 TO MEMORY FAILED                     88417700
```

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*******************************************************  88417710
     ADDRESS    *                                       88417720
     ' OF       *                                        88417730
B-REG  ROUTINE  * A-REG Q-REG XR-1 XR-2 XR-3  STATUS    88417740
*******************************************************  88417750
                *                                        88417760
                *                                        88417770
3137 0 0D8D      DC    A844      MDX 2 LONG FORM          88417780
* N/A   N/A   N/A   FFFE N/A   N/A AFTER LDX             88417790
* N/A   N/A   N/A   FFFF N/A   N/A AFTER MDX 2           884178OD
* INDEX REG 2 NOT EQUAL TO FFFF AFTER MDX +1            88417810
* TO INDEX REG 2                                        88417820
*                                                       88417830
                *                                        88417840
3138 0 0D9C      DC    A846      MDX 3                    88417850
* N/A   N/A   N/A   N/A  FFFF  N/A AFTER LDX             88417860
* N/A   N/A   N/A   N/A  0000  N/A AFTER MDX 2           88417870
* MDX 010 NOT CAUSE A SKIP WHEN INDEX REG 3             88417880
* SENT TO 0000                                          88417890
*                                                       88417900
                *                                        88417910
3139 0 0DA6      DC    A848      MDX 1                    88417920
* N/A   N/A   FFFF  N/A  N/A   N/A AFTER LDX             88417930
* N/A   N/A   0003  N/A  N/A   N/A AFTER MDX 1           88417940
* MDX 010 NOT CAUSE A SKIP WHEN THE SIGN                88417950
* CHANGED ON INDEX REG 1                                88417960
*                                                       88417970
                *                                        88417980
313A 0 0DB0      DC    A849      MDX 1 INDIRECT           88417990
* N/A   N/A   FFFE  N/A  N/A   N/A AFTER LDX             88418000
* N/A   N/A   FFFF  N/A  N/A   N/A AFTER LDX II          88418010
* INDIRECT MDX OF INDEX REG 1 BY +1 FAILED             88418020
*                                                       88418030
                *                                        88418040
313B 0 0DE4      DC    A880      SLCA-XR 1                88418050
* C000  N/A   0010  N/A  N/A   N/A AFTER LDX             88418060
* 0000  N/A   0000  N/A  N/A   N/A AFTER SLCA            88418070
* ACCUM NOT EQUAL 0000                                  88418080
*                                                       88418090
                *                                        88418100
313C 0 0DE4      DC    A880      SLCA-XR 1                88418110
* 0000  N/A   0010  N/A  N/A   N/A AFTER LDX             88418120
* 0000  N/A   0000  N/A  N/A   N/A AFTER SLAC            88418130
* INDEX REG 1 NOT EQUAL 0000                            88418140
*                                                       88418150
                *                                        88418160
313D 0 0E0B      DC    A884      SLCA-XR 1                88418170
* 0001  N/A   FFD0  N/A  N/A   N/A AFTER LDX             88418180
* 8000  N/A   FFC1  N/A  N/A   N/A AFTER ASCL            88418190
* ACCUM NOT EQUAL 8000                                  88418200
*                                                       88418210
                *                                        88418220
313E 0 0E0B      DC    A884      SLCA-XR 1                88418230
* 0001  N/A   FFD0  N/A  N/A   N/A AFTER LDX             88418240
* 8000  N/A   FFC1  N/A  N/A   N/A AFTER LDX             88418250
* INDEX REG 1 NOT EQUAL FFC1                            88418260
*                                                       88418270
                *                                        88418280
313F 0 0E33      DC    A888      SLCA-XR 1                88418290
* 8000  N/A   0010  N/A  N/A   N/A AFTER LDX             88418300
* 8000  N/A   0010  N/A  N/A   N/A AFTER SLCA            88418310
* ACCUM NOT EQUAL 8000                                  88418320
*                                                       88418330
                *                                        88418340
3140 0 0E33      DC    A888      SLCA-XR 1                88418350
* 8000  N/A   0010  N/A  N/A   N/A AFTER LDX             88418360
* 8000  N/A   0010  N/A  N/A   N/A AFTER SLCA            88418370
* INDEX REG 1 NOT EQUAL 0010                            88418380
```

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*******************************************************  88418390
     ADDRESS    *                                       88418400
     OF         *                                        88418410
B-REG  ROUTINE  * A-REG Q-REG XR-1 XR-2 XR-3  STATUS    88418420
*******************************************************  88418430
                *                                        88418440
                *                                        88418450
3141 0 0E6E      DC    A88C      SLC-XR 1                 88418460
* 0000  0000  0020 N/A   N/A   N/A AFTER LDX             88418470
* 0000  0000  0000 N/A   N/A   N/A AFTER SLC             88418480
* ACCUM NOT EQUAL 0000                                  88418490
*                                                       88418500
                *                                        88418510
3142 0 0E6E      DC    A88C      SLC-XR 1                 88418520
* 0000  0000  0020 N/A   N/A   N/A AFTER LDX             88418530
* 0000  0000  0000 N/A   N/A   N/A AFTER SLC             88418540
* Q REG NOT EQUAL 0000                                  88418550
*                                                       88418560
                *                                        88418570
3143 0 0E6E      DC    A88C      SLC-XR 1                 88418580
* 0000  0000  0020 N/A   N/A   N/A AFTER LDX             88418590
* 0000  0000  0000 N/A   N/A   N/A AFTER SLC             88418600
* INDEX REG 1 NOT EQUAL 0000                            88418610
*                                                       88418620
                *                                        88418630
3144 0 0E8D      DC    B882      SLC-XR 1                 88418640
* 0000  0002  FF0F N/A   N/A   N/A AFTER LDX             88418650
* 8000  0000  FFC1 N/A   N/A   N/A AFTER SLC             88418660
* ACCUM NOT EQUAL 8000                                  88418670
*                                                       88418680
                *                                        88418690
3145 0 0E8D      DC    B882      SLC-XR 1                 88418700
* 0000  0002  FF0F N/A   N/A   N/A AFTER LDX             88418710
* 8000  0000  FFC1 N/A   N/A   N/A AFTER SLC             88418720
* Q REG NOT EQUAL 0000                                  88418730
*                                                       88418740
                *                                        88418750
3146 0 0E8D      DC    B882      SLC-XR 1                 88418760
* 0000  0002  FF0F N/A   N/A   N/A AFTER LDX             88418770
* 8000  0000  FFC1 N/A   N/A   N/A AFTER SLC             88418780
* INDEX REG 1 NOT EQUAL FFC1                            88418790
*                                                       88418800
                *                                        88418810
3147 0 0EAF      DC    8884      SLC-XR 1                 88418820
* 0000  0002  001F N/A   N/A   N/A AFTER LDO+LDX         88418830
* 8000  0000  0001 N/A   N/A   C   AFTER SLC             88418840
* A SLC TERMINATED BY A CNE BIT IN ACCUM BIT            88418850
* ZERO 010 NOT TURN ON CARRY                            88418860
*                                                       88418870
                *                                        88418880
3148 0 0EAF      DC    8884      SLC-XR 1                 88418890
* 0000  0002  001F N/A   N/A   N/A AFTER LDO+LDX         88418900
* 8000  0000  0001 N/A   N/A   C   AFTER SLC             88418910
* ACCUM WAS NOT EQUAL TO 8000                           88418920
*                                                       88418930
                *                                        88418940
3149 0 0EAF      DC    8884      SLC-XR 1                 88418950
* 0000  0002  001F N/A   N/A   N/A AFTER LDO+LDX         88418960
* 8000  0002  0001 N/A   N/A   C   AFTER SLC             88418970
* A SLC TERMINATED BY A CNE IN ACCUM BIT                88418980
* ZERO DIO NOT LEAVE XR 1 EQUAL 0001                    88418990
*                                                       88419000
                *                                        88419010
314A 0 0ECF      DC    8885      SLC-1X 1                 88419020
* 0000  0002  001C N/A   N/A   N/A AFTER LDO+LDX         88419030
* 2000  0000  0000 N/A   N/A   OFF AFTER SLC             88419040
* A SLC TERMINATED BY XR 1 GOING TO ZERO LEFT           88419050
* THE CARRY FF SET                                      88419060
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*************************************************************** BB419070
        ADDRESS     *                                           BB419080
          OF        *                                           BB419090
B-REG   ROUTINE     * A-REG Q-REG  XR-1  XR-2  XR-3  STATUS     BB419100
*************************************************************** BB419110
                    *                                           BB419120
                    *                                           BB419130
314B 0  0EEC             DC      B8A0      CMP   A GREATER M    BB419140
                    * 4000  N/A   N/A   N/A   N/A   N/A         BB419150
                    * A GREATER THAN M CMP FAILED               BB419160
                    *                                           BB419170
                    *                                           BB419180
314C 0  0EEC             DC      B8A0      CMP   A GREATER M    BB419190
                    * 40D0  N/A   N/A   N/A   N/A   N/A AFTER LD BB419200
                    * 4000  N/A   N/A   N/A   N/A   N/A AFTER CMP BB419210
                    * ACC DISTROYED AFTER CMP                   BB419220
                    *                                           BB419230
                    *                                           BB419240
314D 0  0F07             DC      B8A1      CMP   A LESS M       BB419250
                    * 0000  N/A   N/A   N/A   N/A   N/A         BB419260
                    * ACC LESS THAN M FAILS                     BB419270
                    *                                           BB419280
                    *                                           BB419290
314E 0  0F11             DC      B8A2      CMP   A LESS M       BB419300
                    * 0000  N/A   N/A   N/A   N/A   N/A         BB419310
                    * ACC LESS THAN M FAILS                     BB419320
                    *                                           BB419330
                    *                                           BB419340
314F 0  0F18             DC      B8A3      CMP  A LESS M        BB419350
                    * 0000  N/A   N/A   N/A   N/A   N/A         BB419360
                    * ACC LESS THAN M FAILS                     BB419370
                    *                                           BB419380
                    *                                           BB419390
3150 0  0F25             DC      B8A4      CMP  A LESS M        BB419400
                    * 8000  N/A   N/A   N/A   N/A   N/A         BB419410
                    * ACC LESS THAN M FAILS                     BB419420
                    *                                           BB419430
                    *                                           BB419440
3151 0  0F2F             DC      B8A5      CMP   A EQ M         BB419450
                    * 1000  N/A   N/A   N/A   N/A   N/A         BB419460
                    * ACC EQ M FAILED                           BB419470
                    *                                           BB419480
                    *                                           BB419490
3152 0  0F3A             DC      B8C0      DCM   AQ GTR M,M+1   BB419500
                    * 8000  0001  N/A   N/A   N/A   N/A         BB419510
                    * DCM AQ GREATER THAN M, M+1 FAILED         BB419520
                    *                                           BB419530
                    *                                           BB419540
3153 0  0F3A             DC      B8C0      DCM   AQ GTR M, M+1  BB419550
                    * 8000  0001  N/A   N/A   N/A   N/A         BB419560
                    * ACC DISTROYED AFTER DCM                   BB419570
                    *                                           BB419580
                    *                                           BB419590
3154 0  0F3A             DC      B8C0      DCM   AQ GTR M,M+1   BB419600
                    * 8000  0001  N/A   N/A   N/A   N/A         BB419610
                    * Q REG DISTROYED AFTER DCM                 BB419620
                    *                                           BB419630
                    *                                           BB419640
3155 0  0F54             DC      B8C1      DCM   AQ LESS M,M+1  BB419650
                    * 0000  8000  N/A   N/A   N/A   N/A         BB419660
                    * DCM FAILED WHEN A,Q LESS THAN M, M+1      BB419670
                    *                                           BB419680
                    *                                           BB419690
3156 0  0F5D             DC      B8C2      DCM   AQ EQ M,M+1    BB419700
                    * 0000  8000  N/A   N/A   N/A   N/A         BB419710
                    * DCM FAILED WHEN A,Q EQ M, M+1             BB419720
                    *                                           BB419730
                    *                                           BB419740
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*************************************************************** BB419750
        ADDRESS     *                                           BB419760
          OF        *                                           BB419770
B-REG   ROUTINE     * A-REG Q-REG  XR-1  XR-2  XR-3  STATUS     BB419780
*************************************************************** BB419790
3157 0  0BBF             DC      A660      LDX 1 -1             BB419800
                    * N/A   N/A   0000  0000  000D  N/A AFTER LDX'S BB419810
                    * N/A   N/A   FFFF  0000  DC00  N/A AFTER LDX 1 BB419820
                    * INDEX 2 CHANGED                           BB419830
                    *                                           BB419840
                    *                                           BB419850
3158 0  08BF             DC      A660      LDX 1 -1             BB419860
                    * N/A   N/A   0000  0000  0000  N/A AFTER LDX'S BB419870
                    * N/A   N/A   FFFF  0000  0000  N/A AFTER LDX 1 BB419880
                    * INDEX 3 CHANGED                           BB419890
                    *                                           BB419900
                    *                                           BB419910
3159 0  0BA7             DC      A662      LDX 2 -1             BB419920
                    * N/A   N/A   0000  0000  0000  N/A AFTER LDX'S BB419930
                    * N/A   N/A   0000  FFFF  0000  N/A AFTER LDX 2 BB419940
                    * INDEX 1 CHANGED                           BB419950
                    *                                           BB419960
                    *                                           BB419970
315A 0  08A7             DC      A662      LDX 2 -1             BB419980
                    * N/A   N/A   0000  0000  0000  N/A AFTER LDX'S BB419990
                    * N/A   N/A   0000  FFFF  0000  N/A AFTER LDX 2 BB420000
                    * INDEX 3 CHANGED                           BB420010
                    *                                           BB420020
                    *                                           BB420030
315B 0  08BF             DC      A664      LDX 3 -1             BB420040
                    * N/A   N/A   0000  0000  0000  N/A AFTER LDX'S BB420050
                    * N/A   N/A   00D0  0000  FFFF  N/A AFTER LDX 3 BB420060
                    * INDEX 1 CHANGED                           BB420070
                    *                                           BB420080
                    *                                           BB420090
315C 0  0BBF             DC      A664      LDX 3 -1             BB420100
                    * N/A   N/A   0000  0000  0000  N/A AFTER LDX'S BB420110
                    * N/A   N/A   0000  D000  FFFF  N/A AFTER LDX 3 BB420120
                    * INDEX 2 CHANGED                           BB420130
                    *                                           BB420140
                    *                                           BB420150
315D 0  09EC             DC      A6D0      INDEXED INST F=0     BB420160
                    * INITIALLY XR 1 HAS CORE LOCATION OF       BB420170
                    *   SYMBOLIC LABEL N6C1                     BB420180
                    * AFTER THE TEST THE ACC SHOULD HAVE        BB420190
                    *   CORE LOCATION OF SYMBOLIC LABEL N6C0    BB420200
                    * SHORT FORM INDEXED INST FAILED (X=1)      BB420210
                    *                                           BB420220
                    *                                           BB420230
315E 0  09FB             DC      A6D2      INDEXED INST F=0     BB420240
                    * INITIALLY XR 2 HAS CORE LOCATION OF       BB420250
                    *   SYMBOLIC LABEL N6C1                     BB420260
                    * AFTER THE TEST THE ACC SHOULD HAVE        BB420270
                    *   CORE LOCATION OF SYMBOLIC LABEL N6C2    BB420280
                    * SHORT FORM INDEXED INST FAILED (X=2)      BB420290
                    *                                           BB420300
                    *                                           BB420310
315F 0  0A04             DC      A6D3      INDEXED INST F=0     BB420320
                    * INITIALLY XR 3 HAS CORE LOCATION OF       BB420330
                    *   SYMBOLIC LABEL N6C1                     BB420340
                    * AFTER THE TEST THE ACC SHOULD HAVE        BB420350
                    *   CORE LOCATION OF SYMBOLIC LABEL N6C1    BB420360
                    * SHORT FORM INDEXED INST. FAILED (X=3)     BB420370
                    *                                           BB420380
                    *                                           BB420390
                    *                                           BB420400
                    *                                           BB420410
                    *                                           BB420420
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************************************************************************* 8B420430
        ADDRESS     *                                                    8B420440
        OF          *                                                    8B420450
B-REG   ROUTINE     * A-REG Q-REG  XR-1  XR-2  XR-3  STATUS              8B42046C
************************************************************************* 8B420470
************************************************************************* 8B420480
3160 0  0DE4             DC    A880        SLCA  CK CARRY                8B420490
                   * 0000  FFFF  000A   N/A   N/A   C    AFTER LDD+LDS   8B420500
                   * 0000  FFFF  0000   N/A   N/A   OFF  AFTER STS       8B420510
                   * CARRY ON  SHOULD BE OFF                            8B420520
                   *                                                     8B420530
                   *                                                     8B420540
3161 0  0E08             OC    A884        SLCA  CK CARRY                8B420550
                   * 0001  0010  FF00   N/A   N/A   OFF  AFTER LDD+LDX   8B420560
                   * 8000  0010  FF01   N/A   N/A   C    AFTER SLCA      8B420570
                   * CARRY OFF,  SHOULD BE ON                           8B420580
                   *                                                     8B420590
                   *                                                     8B420600
3162 0  0E50             OC    A889        NON INDEXED SLCA              8B420610
                   * 0001  N/A   0010   0010   0010  N/A AFTER LD        8B420620
                   * 0002  N/A   N/A    N/A    N/A   N/A AFTER SLCA      8B420630
                   * SLCA  T=0  FAILED                                  8B420640
                   *                                                     8B420650
                   *                                                     8B420660
3163 0  0A10             DC    A605        INDEXED SLA                  8B420670
                   * 0001  N/A   0002   N/A   N/A   N/A AFTER LD+LDX    8B420680
                   * 0004  N/A   N/A    N/A   N/A   N/A AFTER SLA       8B420690
                   * INDEXED SLA  FAILED                                8B420700
                   *                                                     8B420710
                   *                                                     8B420720
3164 0  0A1C             OC    A606        INDEXED SRA                  8B420730
                   * 0004  N/A   N/A    0002  N/A   N/A AFTER LDX+LD    8B420740
                   * 0001  N/A   N/A    N/A   N/A   N/A AFTER SRA       8B420750
                   * INDEXED SRA  FAILED                                P8420760
                   *                                                     8B420770
                   *                                                     8B420780
3165 0  0A28             OC    A6F0        INDEXED BSC                  8B420790
                   * INITIALLY ACC HAS CORE LOCATION OF                 8B4208C0
                   *   SYMBOLIC LABEL A6F1                              8B420810
                   * ACC DISTROYED AFTER INDEXED BSC                    8B420820
                   *                                                     8B420830
                   *                                                     8B420840
3166 0  0A39             OC    A6F1        INDIR, INDEX BSC             8B420850
                   * N/A   N/A   0001   N/A   N/A   N/A AFTER LDX       8B420860
                   * N/A   N/A   N/A    N/A   N/A   N/A AFTER BSC       8B420870
                   * INDIRECT, INDEXED BSC FAILED                       8B420880
                   *                                                     8B420890
                   *                                                     8B420900
3167 0  0820             OC    A640        STX  CK ACC                  8B420910
                   * INITIALLY ACC HAS CORE LOCATION OF                 8B420920
                   *   SYMBOLIC LABEL H640                              8B420930
                   * ACC DISTROYED AFTER STX                            8B420940
                   *                                                     8B420950
                   *                                                     8B420960
3168 0  0DB0             OC    A849        MDX  CK ACC                  8B420970
                   * INITIALLY ACC HAS CORE LOCATION OF                 8B420980
                   *   SYMBOLIC LABEL H849                              8B420990
                   * ACC DISTROYED AFTER MDX                            8B421000
                   *                                                     8B421010
                   *                                                     8B421020
3169 0  08D9             DC    A670        ACC DECODE                   8B421030
                   * 0001  N/A   0010   N/A   N/A   N/A                 8B421040
                   * 0000  N/A   0000   N/A   N/A   N/A                 8B421050
                   * FALSE DECODE DF ACC BE ZERO                        8B421060
                   * * EACH BIT POSITION IS TESTED                      8B421070
                   *                                                     8B421080
                   *                                                     8B421090
                   *                                                     8B421100
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************************************************************************* 8B421110
        ADDRESS     *                                                    8B421120
        OF          *                                                    8B421130
B-REG   ROUTINE     * A-REG Q-REG  XR-1  XR-2  XR-3  STATUS              8B421140
************************************************************************* 8B421150
316A 0  0D18             OC    B807        DVD  OVFLO                   8B421160
                   * 6100  0000  N/A    N/A   N/A   OFF  AFTER LDD      8B421170
                   * N/A   N/A   N/A    N/A   N/A   C    AFTER D        8B421180
                   * OVFLO NOT ON                                       8B421190
                   *                                                     8B421210
3168 0  0D23             DC    B808        DVD  OVFLO                   8B421220
                   * 8000  0000  N/A    N/A   N/A   OFF  AFTER LDD      8B421230
                   * N/A   N/A   N/A    N/A   N/A   D    AFTER D        8B421240
                   * OVFLO NOT ON                                       8B421250
                   *                                                     8B421260
316C 0  0D2E             OC    B809        DVD  NO OVFLO                8B421280
                   * FFFF  FFFF  N/A    N/A   N/A   OFF  AFTER LDD      8B421290
                   * N/A   N/A   N/A    N/A   N/A   OFF  AFTER D        8B421300
                   * OVFLD ON, SHOULD BE OFF                            8B421310
                   *                                                     8B421320
3160 0  0D3A             DC    B810        MPY-DIV ZERO REM            8B421330
                   * ACC WRONG AFTER MPY-DIV TEST                       8B421340
                   *                                                     8B421350
316E 0  0D3A             DC    B810        MPY-DIV ZERO REM            8B421370
                   * Q REG WRONG AFTER MPY-DIV TEST                     8B421380
                   *                                                     8B421390
316F 0  0078             OC    A842        MDX CK ACC                  8B421420
                   * INITIALLY ACC HAS CORE LOCATION OF                 8B421430
                   *   SYMBOLIC LABEL N844                              8B421440
                   * ACC DISTROYED AFTER ADD TO MEMORY                  8B421450
                   *                                                     8B421460
3170 0  0600             OC    A50A        BSC  CK ACC                 8B421480
                   * 8001  N/A   N/A    N/A   N/A   N/A AFTER LD        8B421490
                   * 8001  N/A   N/A    N/A   N/A   N/A AFTER BSC       8B421500
                   * ACC DISTROYED AFTER BSC CONDITIONS MET            8B421510
                   *                                                     8B421520
3171 0  0DC6             DC    A84A        MDX MEM CK SKIP             8B421540
                   * MEMORY LOC HAS ZERO                                8B421550
                   * MDX FAILED TO SKIP                                 8B421560
                   *                                                     8B421570
3172 0  00D0             OC    A85A        MDX MEM CK NO SKP           8B421590
                   * MEMORY LOC IS NON ZERO                             8B421600
                   * MDX SKIPED, SHOULD NOT HAVE                        8B421610
                   *                                                     8B421620
                   *                                                     8B421630
3173 0  0E60             DC    A88A        SW 15 NO INDEX              8B421650
                   * 0000  FFFF  0010   0010  0010  NAFTER LDX'S        8B421660
                   * 7FFF  N/A   N/A    N/A   N/A   NAFTER SLC          8B421670
                   *ACCUM NOT EQ TO 7FFF                                8B421680
                   *                                                     8B421690
                   *                                                     8B421700
3174 0  0F83             OC    F000        IMPROPER CONTROL            8B421720
                   *                       OPERATION SPECIFIED,         8B421730
                   *                       BIT SW 14 ON WITHOUT         8B421740
                   *                       BIT SW 8 OR 12 ON.           8B421750
                   *                       CORRECT SWS AND PUSH         8B421760
                   *                       START TO CONTINUE            8B421770
                   *                                                     8B421780
```

PROCESSOR-CONTROLLER FUNCTION TEST

```
                     *****************************************************  88421790
                     *****************************************************  88421800
3175                     ORG    300                                        88421810
012C 0 B400              DC     /B400      PID                             88421820
                     *                                                     88421830
                     *****************************************************  88421840
                     *                                                     88421850
                     * 8000   N/A   N/A   N/A   N/A    0 AFTER A           88421860
                     * 0000   N/A   N/A   N/A   N/A    C+0AFTER A          88421870
                     *              TEST MDX OPERATION                     88421880
                     *                                                     88421890
                     *****************************************************  88421900
*********************                                                      88421910
CORE    DATA OR        *LA- OPER-                                          88421920
ADDR    INSTRUCTION    *BEL ATION FT OPERANDS + REMARKS   ID+SEG= AT RIGHT 88421930
*********************                                                      88421940
012D 0 3000            X000 DC    /3000       SET SWITCHES TO RUN          88421950
012E 0 7001            A080 MDX   G080                                     88421960
012F 0 3004                 DC    /3004       ERR ID + ERR WAIT            88421970
                     *                        MDX BY 1 FAILED              88421980
0130 0 7002            G080 MDX   G081                                     88421990
0131 0 3005                 DC    /3005       ERR ID + ERR WAIT            88422000
                     *                        MDX BY 2 FAILED              88422010
0132 0 3006                 DC    /3006       ERR ID + ERR WAIT            88422020
                     *                        MDX BY 2 FAILED              88422030
0133 0 7004            G081 MDX   G082                                     88422040
0134 0 3007                 DC    /3007       ERR ID + ERR WAIT            88422050
                     *                        MDX BY 4 FAILED              88422060
0135 0 3008                 DC    /3008       ERR ID + ERR WAIT            88422070
                     *                        MDX BY 4 FAILED              88422080
0136 0 3009                 DC    /3009       ERR ID + ERR WAIT            88422090
                     *                        MDX BY 4 FAILED              88422100
0137 0 300A                 DC    /300A       ERR ID + ERR WAIT            88422110
                     *                        MDX BY 4 FAILED              88422120
0138 0 7002            G082 MDX   G084                                     88422130
0139 0 300B                 DC    /300B       ERR ID + ERR WAIT            88422140
                     *                        MDX BY 2 FAILED              88422150
013A 0 7004            G083 MDX   A0C0        EXIT TO NEXT ROUTINE         88422160
013B 0 70FE            G084 MDX   G083                                     88422170
013C 0 300C                 DC    /300C       ERR ID + ERR WAIT            88422180
                     *                        MDX BY -2 FAILED             88422190
013D 0 300D                 DC    /300D       ERR ID + ERR WAIT            88422200
                     *                        MDX BY -2 FAILED             88422210
013E 0 300E                 DC    /300E       ERR ID + ERR WAIT            88422220
                     *                        MDX BY -2 FAILED             88422230
                     *                                                     88422240
                     *            TEST CF BSC SKIP WHEN IT                 88422250
                     *            SHOULD NOT                               88422260
                     *                                                     88422270
                     *****************************************************  88422280
013F 0 2003            A0C0 LDS   3           SET C AND OF ON              88422290
0140 0 4802                 BSC   C           SK IF CARRY IS OFF           88422300
0141 0 7002                 MDX   G0C1                                     88422310
0142 0 300F                 DC    /300F       ERR ID + ERR WAIT           88422320
                     *                        BSC-CARRY FAILED             88422330
0143 0 0000            N100 DC    0                                        88422340
0144 0 4801            G0C1 BSC   0                                        88422350
0145 0 7001                 MDX   G0C2                                     88422360
0146 0 3010                 DC    /3010       ERR ID + ERR WAIT            88422370
                     *                        BSC-OVERFLOW FAILED          88422380
0147 0 4801            G0C2 BSC   0           CK IF OF WAS RESET           88422390
0148 0 3011                 DC    /3011       ERR ID + ERR WAIT            88422400
                     *                        BSC-CVFLW SKPD-SHOULD        88422410
                     *                        *NOT HAVE                    88422420
0149 0 2000                 LDS   0           RESET CARRY TO OFF           88422430
014A 0 4802                 BSC   C           SK IF CARRY IS OFF           88422440
014B 0 3012                 DC    /3012       ERR ID + ERR WAIT            88422450
                     *                        BSC-C DID NOT SKIP           88422460
```

PROCESSOR-CONTROLLER FUNCTION TEST

```
                     *                                                     88422470
                     *            TEST OF ACC ABILITY TO HOLD              88422480
                     *            ALL ZEROS                                88422490
                     *                                                     88422500
                     *****************************************************  88422510
                                                                           88422520
CORE    DATA OR        *LA- OPER-                                          88422530
ADDR    INSTRUCTION    *BEL ATION FT OPERANDS + REMARKS   ID+SEG= AT RIGHT 88422540
*****************************************************                      88422550
014C 0 C0F6            A100 LD    N100       LD /0000                      88422560
014D 0 4820                 BSC   Z          SK IF ZERO                    88422570
014E 0 3013                 DC    /3013      ERR ID + ERR WAIT             88422580
                     *                       LD ACC TO 0 FAILED            88422590
014F 0 C0F3                 LD    N100       ACC+0,RELOAD TO 0             88422600
0150 0 4820                 BSC   Z          SK IF ZERO                    88422610
0151 0 3014                 DC    /3014      ERR ID + ERR WAIT             88422620
                     *                       LD ACC TO 0 FAILED            88422630
0152 0 4804                 BSC   E          SK IF EVEN                    88422640
0153 0 3015                 DC    /3015      EPR ID + ERR WAIT             88422650
                     *                       BSC ON EVEN FAILED            88422660
                     *                                                     88422670
                     *                       CONTAIN ALL ONES              88422680
                     *                                                     88422690
                     *****************************************************  88422700
0154 0 C04A            A140 LD    N140       ACC.=0,RELOAD TO ONES         88422710
0155 0 4810                 BSC   -          SK IF MINUS                   88422720
0156 0 3016                 DC    /3016      ERR ID + ERR WAIT             88422730
                     *                       LOAD ACC. FAILED OR           88422740
                     *                       *BSC ON NEG. FAILED           88422750
0157 0 4808                 BSC   +                                        88422760
0158 0 7001                 MDX   G140                                     88422770
0159 0 3017                 DC    /3017      EPR ID + ERR WAIT             88422780
                     *                       BSC ON + SKPD-                88422790
0157A 0 4804           G140 BSC   E          *SHOULD NOT HAVE              88422800
015B 0 7001                 MDX   G141                                     88422810
015C 0 3018                 DC    /3018      ERR ID + ERR WAIT             88422820
                     *                       BSC ON E SKPD-                88422830
015D 0 1801            G141 SRA   1          *SHOULD NOT HAVE              88422840
015E 0 4804                 BSC   E                                        88422850
015F 0 7001                 MDX   G142                                     88422860
0160 0 3019                 DC    /3019      ERR ID + ERR WAIT             88422870
                     *                       ACC NOT = 7FFF                88422880
0161 0 1801            G142 SRA   1                                        88422890
0162 0 4804                 BSC   E                                        88422900
0163 0 7001                 MDX   G143                                     88422910
0164 0 301A                 DC    /301A      ERR ID + ERR WAIT             88422920
                     *                       ACC NOT = 3FFF                88422930
0165 0 1801            G143 SRA   1                                        88422940
0166 0 4804                 BSC   E                                        88422950
0167 0 7001                 MDX   G144                                     88422960
0168 0 301B                 DC    /301B      ERR ID + ERR WAIT             88422970
                     *                       ACC NOT = 1FFF                88422980
0169 0 1801            G144 SRA   1                                        88422990
016A 0 4804                 BSC   E                                        88423000
016B 0 7001                 MDX   G145                                     88423010
016C 0 0000                 DC              ERR ID + ERR WAIT              88423020
                     *             /301C      ACC NOT = 0FFF               88423030
016D 0 1801            G145 SRA   1                                        88423040
016E 0 4804                 BSC   E                                        88423050
016F 0 7001                 MDX   G146                                     88423060
0170 0 301D                 DC    /301D      ERR ID + ERR WAIT             88423070
                     *                       ACC NOT = 07FF                88423080
0171 0 1801            G146 SRA   1                                        88423090
0172 0 4804                 BSC   E                                        88423100
0173 0 7001                 MDX   G147                                     88423110
0174 0 301E                 DC    /301E      ERR ID + ERR WAIT             88423120
                     *                       ACC NOT = 03FF                88423130
0175 0 1801            G147 SRA   1                                        88423140
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0176 0  4B04        BSC    E                               8B423150
0177 0  7001        MOX    G148                            8B423160
0178 0  301F        OC     /301F    ERR IO + ERR WAIT      8B423170
                    *                ACC NOT = 01FF         8B423180
0179 0  1801  G148  SRA    1                               8B423190
017A 0  4804        BSC    E                               8B423200
017B 0  7001        MDX    G149                            8B423210
017C 0  3020        OC     /3020    ERR ID + ERR WAIT      8B423220
                    *                ACC NOT = 00FF         8B423230
017D 0  1801  G149  SRA    1                               8B423240
017E 0  4804        BSC    E                               8B423250
017F 0  7001        MOX    G14A                            8B423260
0180 0  3021        DC     /3021    ERR IO + ERR WAIT      8B423270
                    *                ACC NOT = 007F         8B423280
0181 0  1801  G14A  SRA    1                               8B423290
0182 0  4804        BSC    E                               8B423300
0183 0  7001        MO)    G14B                            8B423310
0184 0  3022        OC     /3022    ERP IO + ERR WAIT      8B423320
                    *                ACC NOT = 003F         8B423330
0185 0  1801  G14B  SRA    1                               8B423340
0186 0  4804        BSC    F                               8B423350
0187 0  7001        MOX    G14C                            8B423360
0188 0  5023        OC     /3023    ERR ID + ERR WAIT      8B423370
                    *                ACC NOT = 001F         8B423380
0189 0  1801  G14C  SRA    1                               8B423390
018A 0  4804        BSC    E                               8B423400
018B 0  7001        MDX    G140                            8B423410
018C 0  3024        DC     /3024    ERR IO + ERR WAIT      8B423420
                    *                ACC NOT = 000F         8B423430
018D 0  1801  G140  SRA    1                               8B423440
018E 0  4804        BSC    E                               8B423450
018F 0  7001        MDX    G14E                            8B423460
0190 0  3025        OC     /3025    ERR IO + ERR WAIT      8B423470
                    *                ACC NOT = 0007         8B423480
0191 0  1801  G14E  SRA    1                               8B423490
0192 0  4804        BSC    E                               8B423500
0193 0  7001        MOX    G14F                            8B423510
0194 0  3026        OC     /3026    ERR IO + ERR WAIT      8B423520
                    *                ACC NOT = 0003         8B423530
0195 0  1801  G14F  SRA    1                               8B423540
0196 0  4B04        BSC    E                               8B423550
0197 0  7001        MOX    G150                            8B423560
0198 0  3027        OC     /3027    ERR IO + ERR WAIT      8B423570
                    *                ACC NOT = 0001         8B423580
0199 0  1B01  G150  SRA    1                               8B423590
019A 0  4804        BSC    E                               8B423600
019B 0  3028        DC     /3028    ERR IO + ERR WAIT      8B423610
                    *                ACC NOT = 0000         8B423620
019C 0  4820        BSC    Z                               8B423630
019D 0  3029        OC     /3029    ERR IO + ERR WAIT      8B423640
                    *                ACC NOT = 0000         8B423650
019E 0  7001        MOX    A180     EXIT TC NEXT ROUTINE   8B423660
019F 0  FFFF  N140  OC     /FFFF                           8B423670
                    *                                      8B423680
                    *       TEST LOING OF ONES ON ONES     8B423690
                    *                                      8B423700
           ****(*******************************            8B423710
****************************************************        8B423720
CORE   DATA OR    *LA- OPER-                                8B423730
ADDR   INSTRUCTION *BEL ATION FT OPERANDS + REMARKS   ID+SEQ= AT RIGHT  8B423740
****************************************************        8B423750
01A0 0  C049  A180  LO     N180     LO /FFFF               8B423760
01A1 0  4B2C        BSC    +EZ      SK CN +,EVEN OR ZERO   8B423770
01A2 0  4810        BSC    -        SK IF MINUS            8B423780
01A3 0  302A        DC     /302A    ERR IO + ERR WAIT      8B423790
                    *                ACC NOT = FFFF         8B423800
01A4 0  C045        LO     N180     LO /FFFF               8B423810
01A5 0  4B2C        BSC    +EZ                             9B423820
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01A6 0  4810        BSC    -                               8B423830
01A7 0  302B        OC     /302B    ERR IO + ERR WAIT      8B423840
                    *                ACC NOT = FFFF         8B423850
01A8 0  1801        SRA    1        SHIFT RIGHT CNE        8B423860
                    *                TEST ABILITY OF ACC TO SHIFT  8B423870
01A9 0  4804        BSC    E                               8B423880
01AA 0  7001        MOX    G181                            8B423890
01AB 0  302C        OC     /302C    ERR IO + ERR WAIT      8B423900
                    *                ACC NOT = 7FFF         8B423910
01AC 0  1801  G181  SRA    1                               8B423920
01AD 0  4804        BSC    E                               8B423930
01AE 0  7001        MOX    G182                            8B423940
01AF 0  3020        DC     /3020    ERR ID + ERR WAIT      8B423950
                    *                ACC NOT = 3FFF         8B423960
01B0 0  1801  G182  SRA    1                               8B423970
01B1 0  4804        BSC    E                               8B423980
01B2 0  7001        MOX    G183                            8B423990
01B3 0  302E        OC     /302E    ERR IO + ERR WAIT      8B424000
                    *                ACC NOT = 1FFF         8B424010
01B4 0  1801  G183  SRA    1                               8B424020
01B5 0  4804        BSC    E                               8B424030
01B6 0  7001        MOX    G184                            8B424040
01B7 0  302F        DC     /302F    ERR ID + ERR WAIT      8B424050
                    *                ACC NOT = 0FFF         8B424060
01B8 0  1801  G184  SRA    1                               8B424070
01B9 0  4804        BSC    E                               8B424080
01BA 0  7001        MOX    G185                            8B424090
01BB 0  3030        OC     /3030    ERR IO + ERR WAIT      8B424100
                    *                ACC NOT = 07FF         8B424110
01BC 0  1801  G185  SRA    1                               8B424120
01BD 0  4804        BSC    E                               8B424130
01BE 0  7001        MOX    G186                            8B424140
01BF 0  3031        DC     /3031    ERR ID + ERR WAIT      8B424150
                    *                ACC NOT = 03FF         8B424160
01C0 0  1801  G186  SRA    1                               8B424170
01C1 0  4804        BSC    E                               8B424180
01C2 0  7001        MDX    G187                            8B424190
01C3 0  3032        OC     /3032    ERR IO + ERR WAIT      8B424200
                    *                ACC NOT = 01FF         8B424210
01C4 0  1801  G187  SRA    1                               8B424220
01C5 0  4804        BSC    E                               8B424230
01C6 0  7001        MOX    G188                            8B424240
01C7 0  3033        OC     /3033    ERR IO + ERR WAIT      8B424250
                    *                ACC NOT = 00FF         8B424260
01C8 0  1801  G188  SRA    1                               8B424270
01C9 0  4804        BSC    E                               8B424280
01CA 0  7001        MOX    G189                            8B424290
01CB 0  3034        OC     /3034    ERR ID + ERR WAIT      8B424300
                    *                ACC NOT = 007F         8B424310
01CC 0  1801  G189  SRA    1                               8B424320
01CD 0  4804        BSC    E                               8B424330
01CE 0  7001        MOX    G18A                            8B424340
01CF 0  3035        OC     /3035    ERR IO + ERR WAIT      8B424350
                    *                ACC NOT = 003F         8B424360
01D0 0  1801  G18A  SRA    1                               8B424370
01D1 0  4804        BSC    E                               8B424380
01D2 0  7001        MOX    G18B                            8B424390
01D3 0  3036        OC     /3036    ERR IO + ERR WAIT      8B424400
                    *                ACC NOT = 001F         8B424410
01D4 0  1801  G18B  SRA    1                               8B424420
01D5 0  4804        BSC    E                               8B424430
01D6 0  7001        MOX    G18C                            8B424440
01D7 0  3037        OC     /3037    ERR IO + ERR WAIT      8B424450
                    *                ACC NOT = 000F         8B424460
01D8 0  1801  G18C  SRA    1                               8B424470
01D9 0  4804        BSC    E                               8B424480
01DA 0  7001        MOX    G180                            8B424490
01DB 0  3038        OC     /3038    ERR IO + EPR WAIT      8B424500
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                    *                   ACC NOT = 0007           BB424510
01DC 0  1801    G18D  SRA   1                                    BB424520
01DD 0  4B04          BSC   E                                    BB424530
01DE 0  7001          MDX   G18E                                 BB424540
01DF 0  3039          DC    /3039         ERR ID + ERR WAIT      BB424550
                    *                   ACC NOT = 0003           BB424560
01E0 0  1801    G18E  SRA   1                                    .BB424570
01E1 0  4804          BSC   E                                    BB4245B0
01E2 0  7001          MDX   G18F                                 BB424590
01E3 0  303A          DC    /303A         ERR ID + ERR WAIT      BB424600
                    *                   ACC NOT = 0001           BB424610
01E4 0  1801    G1BF  SRA   1                                    BB424620
01E5 0  4804          BSC   E                                    BB424630
01E6 0  303B          OC    /303B         ERR ID + ERR WAIT      BB424640
                    *                   ACC NOT = 0000           BB424650
01E7 0  4820          BSC   Z                                    BB424660
01E8 0  303C          DC    /303C         ERR ID + ERR WAIT      BB424670
                    *                   ACC NOT = 0000           BB424680
01E9 0  7001          MDX   A1C0          EXIT TO NEXT ROUTINE   BB424690
01EA 0  FFFF    N180  DC    /FFFF                                BB424700
                    *                                            BB424710
                    *           TEST ABILITY TO LOAD ZEROS       BB424720
                    *           ON TOP OF ZEROS AND ONES ON      BB424730
                    *           TOP OF ZEROS                     BB424740
                    *                                            BB424750
                    ***********************************          BB424760
**************************************************************** BB424770
CORE    DATA OR   *LA- OPER-                                     BB424780
ADDR    INSTRUCTION *BEL ATION FT OPERANDS + REMARKS   ID*SEQ= AT RIGHT BB424790
**************************************************************** BB424800
01EB 0  CC07    A1C0  LD    N1C0          LD   /0000             BB424810
01EC 0  4820          BSC   Z             SK ON ZERO            BB424820
01ED 0  303D          DC    /303D         ERR ID + ERR WAIT     BB424830
                    *                   ACC NOT = ZERO           BB424840
01EE 0  C005          LD    N1C1          LD   /FFFF             BB424850
01EF 0  482C          BSC   +EZ                                  BB424960
01F0 0  4810          BSC   -             SK ON MINUS           BB424870
01F1 0  303E          OC    /303E         ERR ID + ERR WAIT     BB424880
                    *                   ACC NOT = FFFF           BB424890
01F2 0  7002          MDX   A1D0          EXIT TO NEXT ROUTINE   BB424900
01F3 0  0000    N1C0  DC    /0000                                BB424910
01F4 0  FFFF    N1C1  DC    /FFFF                                BB424920
                    *                                            BB424930
                    *           TEST EOR OPERATION               BB424940
                    *                                            BB424950
                    ***********************************          BB424960
01F5 0  C01C    A1D0  LD    N1D1          LD   /0000             BB424970
01F6 0  4820          BSC   Z             SK ON ZERO            B6424980
01F7 0  303F          DC    /303F         ERR ID + ERR WAIT     BB424990
                    *                   ACC NOT = ZERO           BB425000
01F8 0  F019          EOR   N1D1          ZERO WITH /0000       BB425010
01F9 0  4820          BSC   Z             SK ON ZERO            BB425020
01FA 0  3040          DC    /3040         ERR ID + ERR WAIT     BB425030
                    *                   EOR OF O AND O FAILED    BB425040
01FB 0  C015          LD    N1D0          LD   /FFFF             BB425050
01FC 0  F014          EOR   N1D0          ZERO WITH /FFFF       BB425060
01FD 0  4820          BSC   Z                                    BB425070
01FE 0  3041          OC    /3041         ERR ID + ERR WAIT     BB425080
                    *                   EOR OF 1 AND 1 FAILED    BB425090
01FF 0  F011          EOR   N1D0                                 BB425100
0200 0  482C          BSC   +EZ                                  BB425110
0201 0  4810          BSC   -                                    BB425120
0202 0  3042          DC    /3042         ERR ID + ERR WAIT     BB425130
                    *                   FOR OF 1 AND 0 FAILED    BB425140
0203 0  1801          SRA   1                                    BB425150
0204 0  F00E          EOR   N1D2                                 BB425160
0205 0  4820          BSC   Z                                    BB425170
0206 0  3043          DC    /3043         ERR IO + ERR WAIT     BB425180
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                    *                   EOR OF 1 AND 0 FAILED    BB425190
0207 0  C009          LO    N1D0                                 BB425200
0208 0  F009          EOR   N1D1                                 BB425210
0209 0  482C          BSC   +EZ                                  BB425220
020A 0  4810          BSC   -                                    BB425230
020B 0  3044          OC    /3044         ERR ID + ERR WAIT     BB425240
                    *                   EOR OF 0 AND 1 FAILED    BB425250
020C 0  1801          SRA   1                                    BB425260
020D 0  F005          FOR   N1D2                                 BB425270
020E 0  4820          BSC   Z                                    BB425280
020F 0  3045          DC    /3045         ERR ID + ERR WAIT     BB425290
                    *                   EOR OF 0 AND 1 FAILED    BB425300
0210 0  7003          MOX   A1E0          EXIT TO NEXT ROUTINE   BB425310
0211 0  FFFF    N100  DC    /FFFF                                BB425320
0212 0  0000    N1D1  DC    /0000                                BB425330
0213 0  7FFF    N1D2  DC    /7FFF                                BB425340
                    *                                            BB425350
                    *           TEST OF ABILITY TO SET           BB425360
                    *           F BIT TO ONE                     BB425370
                    *                                            BB425380
                    ***************************************************** BB425390
0214 00 C400021F A1E0 LD   L N1E1         LD   /0000             BB425400
0216 0  4820          BSC   Z             SK ON ZERO            BB425410
0217 0  3046          DC    /3046         ERR ID + ERR WAIT     BB425420
                    *                   WRONG LOCATION LOADED    BB425430
0218 00 C400021E      LD   L N1E0         LD C(N1E0)            BB425440
021A 0  F003          EOR   N1E0                                 BB425450
021B 0  4820          BSC   Z             SK ON ZERO            BB425460
021C 0  3047          DC    /3047         ERR ID + ERR WAIT     BB425470
                    *                   WRONG LOCATION LOADE     BB425480
021D 0  7002          MDX   A1F0          EXIT TO NEXT ROUTINE   BB425490
021E 0  021E    N1E0  DC    N1E0                                 BB425500
021F 0  0000    N1E1  DC    /0000                                BB425510
                    *                                            BB425520
                    *           TEST OF INDIRECT ADDRESSING      BB425530
                    *                                            BB425540
                    ***************************************************** BB425550
0220 00 C480022C A1F0 LD   I N1F2         LD   /0000             BB425560
0222 0  4820          BSC   Z             SK ON ZERO            BB425570
0223 0  3048          DC    /3048         ERR ID + ERR WAIT     BB425580
                    *                   WRONG LOCATION LOADED    BB425590
0224 00 C480022B      LD   I N1F1         LD C(N1F1)            BB425600
0226 0  F004          EOR   N1F1          ZERO WITH C(N1F1)     BB425610
0227 0  4820          BSC   Z                                    BB425620
0228 0  3049          DC    /3049         ERR ID + ERR WAIT     BB425630
                    *                   WRONG LOCATION LOADED    BB425640
0229 0  7003          MDX   A200          EXIT TO NEXT ROUTINE   BB425650
022A 0  0000    N1F0  DC    /0000                                BB425660
022B 0  022B    N1F1  DC    N1F1                                 BB425670
022C 0  022A    N1F2  DC    N1F0                                 BB425680
                    *                                            BB425690
                    *           TEST OF BSC LONG FORM AND        BB425700
                    *           INDIRECT OPERATION               BB425710
                    *                                            BB425720
                    **************************************************************** BB425730
**************************************************************** BB425740
CORE    DATA OR   *LA- OPER-                                     BB425750
400R    INSTRUCTION *BEL ATION FT OPERANDS + REMARKS   ID*SEQ= AT RIGHT BB425760
**************************************************************** BB425770
022D 00 4C000231 A200 BSC  L G200                                BB425780
022F 0  304A          DC    /304A         ERR IO + ERR WAIT     BB425790
                    *                   BSC OID NOT BRANCH       BB425800
0230 0  304B          OC    /304B         ERR ID + ERR WAIT     BB425810
                    *                   BSC SKPD-SHOULD BRNCH    BB425820
0231 0  C03A    G200  LO    N200                                 BB425830
0232 00 4C040236      BSC  L G201,E       BR IF NOT EVEN        BB425840
0234 0  304C          DC    /304C         ERR ID + ERR WAIT     B6425850
                    *                   BSC E DID NOT BRANCH     BB425860
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0235 0  3040           DC    /304D        ERR ID + ERR WAIT           88425870
       *                                  BSC SKPD-SHOULD BRNCH       88425880
0236 00 4C08023A  G201 BSC L G202,+       BR IF NOT PLUS             88425890
0238 0  304E           DC    /304E        ERR ID + ERR WAIT           88425900
       *                                  BSC - DID NOT BRANCH       88425910
0239 0  304F           DC    /304F        ERR ID + ERR WAIT           98425920
       *                                  BSC SKPD-SHOULD BRNCH       88425930
023A 00 4C20023E  G202 BSC L G203,Z                                   88425940
023C 0  3050           DC    /305D        ERR ID + ERR WAIT           88425950
       *                                  BSC Z DID NOT SKIP         88425960
023D 0  3051           DC    /3051        ERR ID + ERR WAIT           88425970
       *                                  BSC SKPD-SHOULD BRNCH       88425980
023E 00 4C100241  G203 BSC L V154,-       BR IF NOT MINUS           88425990
0240 0  7001           MDX   G204                                     88426000
0241 0  3052      V154 DC    /3052        ERR ID + ERR WAIT           88426010
       *                                  BSC SKPD-SHOULD NOT        88426020
0242 0  2003      G204 LDS   3            SET C AND OF ON            88426030
0243 00 4C020247       BSC L G205,C       BR IF CARRY IS ON         88426040
0245 0  3053           DC    /3053        ERR ID + ERR WAIT           88426050
       *                                  BSC C DID NOT BRANCH       88426060
0246 0  3054           DC    /3054        ERR ID + ERR WAIT           88426070
       *                                  BSC SKPD-SHOULD BRNCH       88426080
0247 00 4C010248  G205 BSC L G208,C       BR IF OF ON               88426090
0249 0  3055           DC    /3055        ERR ID + ERR WAIT           88426100
       *                                  BSC O DID NOT BRANCH       88426110
024A 0  3056           DC    /3056        ERR ID + ERR WAIT           88426120
       *                                  BSC SKPD-SHOULD BRNCH       88426130
0248 00 4C01024E  G208 BSC L V168,D       BR IF OF ON               88426140
024D 0  7001           MDX   G206                                     88426150
024E 0  3057      V168 DC    /3057        ERR ID + ERR WAIT           88426160
       *                                  BSC BRNCD-SHOULD NOT       88426170
024F 0  2000      G206 LDS   D                                       88426180
0250 00 4C020253       BSC L V170,C       BR IF CARRY IS OFF        88426190
0252 0  7001           MDX   G207                                     88426200
0253 0  3058      V170 DC    /3058        ERR ID + ERR WAIT           88426210
       *                                  BSC BRNCD-SHOULD NOT       88426220
0254 00 4C010257  G207 BSC L V174,C       BR IF OF ON               88426230
0256 0  7001           MDX   G209                                     88426240
0257 0  3059      V174 DC    /3059        ERR ID + ERR WAIT           88426250
       *                                  BSC BRNCD-SHOULD NOT       88426260
0258 0  C014      G209 LD    N201                                     88426270
0259 00 4C18025D       BSC L G20A,+-      BR ON ZERO                88426280
025B 0  305A           DC    /305A        ERR ID + ERR WAIT           88426290
       *                                  BSC +- DID NOT BRANCH      88426300
025C 0  305B           DC    /305B        ERR ID + ERR WAIT           88426310
       *                                  BSC SKPD-SHOULD BRNCH       88426320
025D 0  C00E      G20A LD    N200                                     88426330
025E 00 4C18026I       BSC L V180,+-                                 88426340
0260 0  7001           MDX   G200                                     88426350
0261 0  305C      V180 DC    /305C        ERR ID + ERR WAIT           88426360
       *                                  BSC BRNCHED-SHOULDNT       88426370
0262 0  C008      G20D LD    N202                                     88426380
0263 00 4C180266       BSC L VI84,+-                                 88426390
0265 0  7001           MDX   G208                                     88426400
0266 0  305D      VI84 DC    /305D        ERR ID + ERR WAIT           88426410
       *                                  BSC BRNCHED-SHOULDNT       88426420
0267 00 4C80026F  G208 BSC I N203                                     88426430
0269 0  305E           DC    /305E        ERR ID + ERR WAIT           88426440
       *                                  INDIRECT BSC FAILED        88426450
026A 0  305F           DC    /305F        ERR ID + ERR WAIT           88426460
       *                                  INDIRECT BSC FAILED        88426470
026B 0  7004      G20C MDX   A240         EXIT TO NEXT ROUTINE       88426480
026C 0  FFFF      N200 DC    /FFFF                                    88426490
026D 0  0000      N201 DC    /0000                                    88426500
026E 0  0001      N202 DC    /0001                                    88426510
026F 0  026B      N203 DC    G20C                                     88426520
       *                                                               88426530
       *                                  TEST SHORT AND LONG FORM    88426540
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       *                     BSI                                       88426550
       *.                                                              88426560
       *************************************************               88426570
*********************************************************** 88426580
CORE     DATA OR   *LA- OPER-                                          88426590
ADDR     INSTRUCTION *BEL ATION FT OPERANDS + REMARKS  ID+SEQ= AT RIGHT 88426600
*********************************************************** 88426610
0270 D  4002      A240 BSI   N241      STORE ADDRESS OF I REG         88426620
0271 0  D271      N24D DC    N240      STORE ADDRESS OF I REG         88426630
0272 0  3060           DC    /3060     ERR ID + ERR WAIT              88426640
       *                               BSI SKPD-SHOULD BRNCH          88426650
0273 0  0000      N241 DC    /0000     RETURN ADDR FOR MAIN PROG      88426660
0274 0  COFE           LD    N241      LD RETURN ADDR                 88426670
0275 0  F0F8           EOR   N240      ZERO IN RETURN ADDR            88426680
0276 0  4820           BSC   Z                                        88426690
0277 0  3061           DC    /3061     ERR ID + ERR WAIT              88426700
       *                               BSI NOT STORED I REG           88426710
0278 00 4408027D       BSI L N243,+    STORE ADDR OF 1 REG            88426720
027A 0  3062      VIAC DC    /3062     ERR ID + ERR WAIT              88426730
       *                               BSI + DID NOT BRANCH           88426740
0278 0  3063           DC    /3063     ERR ID + ERR WAIT              88426750
       *                               BSI SKPD-SHOULD BNCH           88426760
027C 0  027A      N242 DC    VIAC                                     88426770
027D 0  0000      N243 DC    /0000     RETURN ADDR FOR MAIN PROG      88426780
027E 0  COFE           LD    N243                                     88426790
027F 0  F0FC           EOR   N242                                     88426800
0280 0  4820           BSC   Z                                        88426810
0281 0  3064           DC    /3064     ERR ID + ERR WAIT              88426820
       *                               BSI NOT STORE I REG            88426830
       *                                                               88426840
       *                     TEST OF INSTR REQUIRED FOR               88426850
       *                     ERROR CONTROL                            88426860
       *                                                               88426870
       *********************************************************** 88426880
0282 0  C04A      A900 LD    F911      LD A NUMBER                    88426890
0283 0  D04A           STO   F912                                     88426900
0284 0  C04A           LD    F913                                     88426910
0285 0  CC48           LD    F912                                     88426920
0286 0  F046           EOR   F911                                     88426930
0287 0  4820           BSC   Z                                        88426940
0288 0  3065           DC    /3065     ERR ID + ERR WAIT              88426950
       *                               STORE FAILED                   88426960
0289 0  C049           LD    F918      CK FIRST PASS SW (/0002)       88426970
028A 0  4820           BSC   Z         IS SW ON                       88426980
028B 0  704D           MDX   A2B0      YES GO TO NEXT ROUTINE         88426990
028C 0  C044           LD    F916      GET 0002                       88427000
028D 0  D045           STO   F918      STORE /0002                    88427010
028E 0  181D           SRA   16        CLEAR ACC                      88427020
028F 00 D4000001       STO L /0001     ZERO WITH /0001                88427030
0291 0  61FF           LDX  1 -1       LD XR 1 WITH -1                88427040
0292 00 C4000001       LD  L /0001     ZERO IN 1800  -1 FOR 1130      88427050
0294 0  4820           BSC   Z         ZERO FOR 1800                  88427060
0295 0  7010           MDX   G901      1130 CPU                       88427070
0296 0  C030           LD    F919      1800 P-C LD /0240              88427080
0297 0  D033           STO   F903      STO /0240  THIS IS AREA,       88427090
0298 00 D4000F81       STO L N8C2      * FUNCTION AND MODIFIER        88427100
029A 00 D4000FED       STO L F004      * FOR READING DATA ENTRY       88427110
029C 00 D4000FF4       STO L F007      * SWITCHES IN 1800             88427120
029E D  0837      G902 XIO   F922      SENSE SENSE/PROG SWS           88427130
029F 0  E038           AND   F923      IGNORE CE SWS. I/FF00)         88427140
02A0 0  F037           EOR   F923      ZERO WITH /FF00                88427150
*********************************************************** 88427160
CORE     DATA OR   *LA- OPER-                                          88427170
ADDR     INSTRUCTION *BEL ATION FT OPERANDS + REMARKS  ID+SEQ= AT RIGHT 88427180
*********************************************************** 88427190
02A1 00 4C1802AE       BSC L G900,+-   BRANCH ON ZERO                 88427200
02A3 0  F034           EOR   F923                                     88427210
02A4 0  3066           DC    /3066     ERROR ID + ERR WAIT            88427220
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                *                      SENSE/PROG SWS NOT           88427230
                *                      * EQUAL TO /FF00             88427240
02A5 0  70F8          MDX   G902       REPEAT TEST                  88427250
02A6 0  C02E    G901  LD    F920       1130 CPU  LD /3A00           88427260
02A7 0  D023          STO   F903       STO /3A00  THIS IS           88427270
02A8 00 D4000F81      STO L N8C2       * AREA, FUNCTION +           88427280
02AA 00 D4000FED      STO L F004       * MODIFIER FOR READING       88427290
02AC 00 D4000FF4      STO L F007       * DATA ENTRY SWITCHES        88427300
02AE 0  0818    G900  XIO   F902       TEST DATA ENTRY SWS          88427310
02AF 0  C022          LD    F917       * FOR /FFFF                  88427320
02B0 0  F01F          EOR   F915                                   88427330
02B1 00 4C1800236     BSC L X001,+-    BRANCH ON ZERO              88427340
02B3 0  F01C          EOR   F915                                   88427350
02B4 0  3067          DC    /3067      ERR ID + ERR WAIT           88427360
                *                      DATA ENTRY SWS NOT           88427370
                *                      EQUAL TO /FFFF              88427380
02B5 0  70F8          MDX   G900                                   88427390
02B6 0  3001    X001  DC    /3001      SET SENSE/PROG AND          88427400
                *                      DATA ENTRY SWS TO           88427410
                *                      ZEROS AND PUSH START        88427420
02B7 0  C013          LD    F903       CK FOR 1130 (3A00-1130)     88427430
02B8 0  F01C          EOR   F920                                   88427440
02B9 00 4C1802C1      BSC L G904,+-    XFER IF 1130                88427450
02BB 0  081B    G903  XIO   F922       TEST SENSE/PROG SWS         88427460
02BC 0  E01B          AND   F923       IGNORE CE SWS.  (/FF00)     88427470
02BD 00 4C1802C1      BSC L G904,+-    BRANCH IF CK                88427480
02BF 0  3068          DC    /3068      ERR ID + ERR WAIT           88427490
                *                      SENSE/PROG SWS NOT          88427500
                *                      * EQUAL TO /0000            88427510
02C0 0  70FA          MDX   G903       REPEAT TEST                 88427520
02C1 0  0808    G904  XIO   F902       TEST DATA ENTRY SWS         88427530
02C2 0  C00F          LD    F917       * FOR /0000                 88427540
02C3 00 4C1802C7      BSC L X003,+-    BRANCH ON ZERO              88427550
02C5 0  3069          DC    /3069      ERR ID + ERR WAIT           88427560
                *                      DATA ENTRY SWITCHES         88427570
                *                      * NCT EQ /0000              88427580
02C6 0  70FA          MDX   G904                                   88427590
02C7 0  3002    X003  DC    /3002      SET 8IT SWITCHES AS         88427600
                *                      * DESIRED FOR RUN           88427610
                *                      * AND PUSH START            88427620
02C8 0  7010          MDX   A280       EXIT TO NEXT ROUTINE        88427630
02CA   0000          BSS E                                        88427640
02CA 0  02D2    F902  DC    F917                                   88427650
02CB 0  0240    F903  DC    /0240      EQUAL /3A00 IN 1130         88427660
02CC 0  02CC    F904  DC    F904                                   88427670
02CD 0  02CE    F911  DC    F912                                   88427680
02CE 0  0000    F912  DC    /0000                                  88427690
02CF 0  0000    F913  DC    /0000                                  88427700
02D0 0  FFFF    F915  DC    /FFFF                                  88427710
02D1 0  0002    F916  DC    /0002                                  88427720
02D2 0  0000    F917  DC    /0000                                  88427730
02D3 0  0000    F918  DC    /0000                                  88427740
02D4 0  0240    F919  DC    /0240      1800 READ 8IT SWS CONSTANT  88427750
02D5 0  3A00    F920  DC    /3A00      1130 READ 6IT SWS CONSTANT  88427760
02D6 0  0000    F922  DC    0          SENSE SENSE/PROG CON        88427770
02D7 0  0760          DC    /0760                                  88427780
02D8 0  FF00    F923  DC    /FF00                                  88427790
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CORE    DATA OR   *LA- OPER-
ADDR    INSTRUCTION #BEL ATION FT OPERANDS + REMARKS   ID+SEQ= AT RIGHT
0209 0  C039    A280  LD    N280                                  88427970
02DA 0  1810          SRA   16                                    88427980
02DB 00 4C1802E0      BSC L G280,+-    BRANCH ON ZERO             88427990
02DD 00 44000F83      BSI L F000       SRA 16 FAILED              88428000
02DF 0  306A          DC    /306A      ERR ID                     88428010
02E0 00 44000FDE G280 BSI L F005       CK LOCK ON ERROR           88428020
02E2 0  70F6          MDX   A280       LOOP                       88428030
02E3 0  C030    A281  LD    N281       LD /8000                   88428050
02E4 0  180F          SRA   15         NOW A=/0001                88428060
02E5 0  F02F          EOR   N282       ZERO WITH /0001            88428070
02E6 00 4C1802E8      BSC L G281,+-    BRANCH ON ZERO             88428080
02E8 00 44000F83      BSI L F000       SRA 15 FAILED              88428090
02EA 0  306B          DC    /306B      ERR ID                     88428100
02EB 00 44000FDE G281 BSI L F005       CK LOCK ON ERROR           88428110
02ED 0  70F5          MDX   A281       LOOP                       88428120
02EE 0  C027    A282  LD    N283       LD /AAAA                   88428140
02EF 0  1801          SRA   1          NOW A=/5555                88428150
02F0 0  F026          EOR   N284       ZERO WITH /5555            88428160
02F1 00 4C1802F6      BSC L G282,+-    BRANCH ON ZERO             88428170
02F3 00 44000F83      BSI L F000       SRA 1 FAILED               88428180
02F5 0  306C          DC    /306C      ERR ID                     88428190
02F6 00 44000FDE G282 BSI L F005       CK LOCK ON ERROR           88428200
02F8 0  70F5          MDX   A282       LOOP                       88428210
02F9 0  C01D    A283  LD    N284       LD /5555                   88428230
02FA 0  1801          SRA   1          NOW A=/2AAA                88428240
02FB 0  F01C          EOR   N285       ZERO WITH /2AAA            88428250
02FC 00 4C180301      BSC L G283,+-    BRANCH ON ZERO             88428260
02FE 00 44000F83      BSI L F000       SRA 1 FAILED               88428270
0300 0  306D          DC    /306D      ERR ID                     88428280
0301 00 44000FDE G283 BSI L F005       CK LOCK ON ERROR           88428290
0303 0  70F5          MDX   A283       LOOP                       88428300
0304 0  C00F    A284  LD    N281       LD /8000                   88428320
0305 0  1801          SRA   1          NOW A- /4000               88428330
0306 0  1802          SRA   2          A= /1000                   88428340
0307 0  1804          SRA   4          A=/0100                    88428350
0308 0  1808          SRA   8          A = /0001                  88428360
0309 0  F008          EOR   N282       ZERO WITH /0001            88428370
030A 00 4C18030F      BSC L G284,+-    BRANCH ON ZERO             88428380
030C 00 44000F83      BSI L F000       COMB SRA FAILED            88428390
030E 0  306E          DC    /306E      ERR ID                     88428400
030F 00 44000FDE G284 BSI L F005       CK LOCK ON ERROR           88428410
0311 0  70F2          MDX   A284       LOOP                       88428420
0312 0  7006          MDX   A2C0       EXIT TO NEXT ROUTINE       88428430
0313 0  FFFF    N280  DC    /FFFF                                 88428440
0314 0  8000    N281  DC    /8000                                 88428450
0315 0  0001    N282  DC    /0001                                 88428460
0316 0  AAAA    N283  DC    /AAAA                                 88428470
0317 0  5555    N284  DC    /5555                                 88428480
0318 0  2AAA    N285  DC    /2AAA                                 88428490
                *                                                 88428500
                *                      TEST OF AND FUNCTION       88428510
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CORE    DATA OR   *LA- OPER-
ADDR    INSTRUCTION *8EL ATION FT OPERANDS + REMARKS   ID+SEQ= AT RIGHT
0319 0  C029    A2C0  LD    N2C0       LD /0000                   88428580
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PROCESSOR-CONTROLLER FUNCTION TEST

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031A 0  E02B         ANO   N2C0        ANO /0000              BB42B590
031B 00 4C1B032U     BSC L G2C0,+-     BRANCH ON ZERO         BB42B600
031D 00 44000FB3     BSI L F000        AND OF 0 AND FAILED    BB42B610
031F 0  306F         DC    /306F        ERR ID                BB42B620
0320 00 44000FDE G2C0 BSI L F005        CK LOCK ON ERROR      BB42B630
0322 0  70F6         MOX   A2C0          LOOP                 BB42B640
                **c*********************.***************       BB42B650
0323 U  CU1F     A2C4 LD    N2C0          LD /0000            BB42B660
0324 0  E01F         AND   N2C2          LD /FFFF             BB42B670
0325 00 4C1B032A     BSC L G2C4,+-     BRANCH ON ZERO         BB42B680
0327 00 4C18032A     BSI L F000        ANO OF 0 ANO 1 FAILED  BB42B690
0329 0  3070         DC    /3070        ERR IO                BB42B700
032A 00 44000FDE G2C4 BSI L F005        CK LOCK ON ERROR      BB42B710
032C 0  70F6         MDX   A2C4          LOOP                 BB42B720
                **********************.***************         BB42B730
032D 0  C016     A2C8 LD    N2C2          LD /FFFF            BB42B740
032E 0  E014         AND   N2C0          ANO /0000            BB42B750
032F 00 4C1B0334     BSC L G2C8,+-     BRANCH ON ZERO         BB42B760
0331 00 44000FB3     BSI L F000        AND OF 1 ANO 0 FAILED  BB42B770
0333 0  3071         OL    /3071        ERR ID                BB42B7B0
0334 00 44000FOE G2C8 BSI L F005        CK LOCK ON ERROR      BB42B790
0336 0  70F6         MDX   A2CB          LOOP                 BB42B800
                **********************.***************         BB42B810
0337 0  COOC     A2CC LD    N2C2          LD /FFFF            BB42B820
0338 0  EOOB         ANO   N2C2          ANO /FFFF            BB42B830
0339 0  FOOA         EOR   N2C2          ZERO WITH /FFFF      BB42B840
033A 00 4C1B033F     BSC L G2CC,+-     BRANCH ON ZERO         BB42B850
033C 00 44000FB3     BSI L F000        ANO OF 1 AND 1 FAILEO  BB42B860
033E 0  3072         DC    /3072        ERR ID                BB42B870
033F 00 44000FDE G2CC BSI L F005        CK LOCK ON ERROR      BB42BBB0
0341 0  70F5         MOX   A2CC          LOOP                 BB42B890
0342 0  7002         MOX   A300          EXIT TO NEXT ROUTINE BB42B900
0343 0  0000     N2C0 DC    /0000                             BB42B910
0344 0  FFFF     N2C2 OC    /FFFF                             BB42B920
                *                                             BB42B930
                *        TEST OF OR FUNCTION                  BB42B940
                *                                             BB42B950
                ****************************.***********       BB42B960
****************************************************.****************  BB42B970
CORE   DATA OR *LA- OPER-                                      BB42B980
ADDR   INSTRUCTION *BEL ATION FT OPERANOS + REMARKS  IO+SEQ= AT RIGHT BB42B990
***************************************************.****************   BB429000
0345 0  C020     A300 LD    N300          LD /0000            BB429010
0346 0  E81F         OR    N300          OR /0000             BB429020
0347 0U 4C1B034C     BSC L G300,+-     BRANCH ON ZERO         BB429030
0349 00 44000FB3     BSI L F000        OR OF 0 AND 0 FAILED   BB429040
034B 0  3073         DC    /3073        ERR IO                BB429050
034C 00 44000FDE G300 BSI L F005        CK LOCK ON ERROR      BB429060
034E 0  70F6         MOX   A300          LOOP                 BB429070
                ****** ******* *.***************               BB429080
034F 0  C016     A302 LD    N300          LD /0000            BB429090
0350 0  E816         OR    N302          OR /FFFF             BB429100
0351 0  F015         EOR   N302          ZERO WITH /FFFF      BB429110
0352 00 4C1B0357     BSC L G302,+-     BRANCH ON ZERO         BB429120
0354 00 44000FB3     BSI L F000        OR OF 0 AND 1 FAILED   BB429130
0356 0  3074         OC    /3074        ERR ID                BB429140
0357 00 44000FOE G302 BSI L F005        CHECK LOOP SWITCH     BB429150
0359 0  70F5         MOX   A302          LOOP                 BB429160
                *******************.***************            BB429170
035A 0  COOC     A304 LD    N302          LD /FFFF            BB429180
035B 0  E80B         JR    N302          OR /FFFF             BB429190
035C 0  FOOA         EOR   N302          EOR IN /FFFF         BB429200
035D 00 4C1B0362     BSC L G304,+-     BRANCH ON ZERO         BB429210
035F 00 44000FB3     BSI L F000        OR OF 1 AND 1 FAILED   BB429220
0361 0  3075         DC    /3075        ERR ID                BB429230
0362 00 44000FDE G304 BSI L F005        CK LOCK ON ERROR      BB429240
0364 0  70F5         MDX   A304          LOOP                 BB429250
0365 0  7002         MDX   A340          EXIT TO NEXT ROUTINE BB429260
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PROCESSOR-CONTROLLER FUNCTION TEST

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0366 0  0000     N300 OC    /0000                             BB429270
0367 0  FFFF     N302 DC    /FFFF                             BB4292B0
                *                                             BB429290
                *        TEST OF RTE 16 UPERATION             BB429300
                *                                             BB429310
                ********************************:*************  BB429320
****************************************************:**************** BB429330
CORE   OATA OR *LA- OPER-                                      BB429340
ADOR   INSTRUCTION *BEL ATION FT OPERANOS + REMARKS   IO+SEQ= AT RIGHT BB429350
****************************************************:**************** BB429360
0368 0  C016     A340 LD    N340          LD /0000            BB429370
0369 0  1800         RTE   16            PLACE /0000 IN Q REG BB429380
036A 0  C015         LO    N341          LO /FFFF             BB429390
036B 0  1800         RTE   16            NOW A=/0000 Q=/FFFF  BB429400
036C 00 4C1B0271     BSC L G340,+-     BRANCH ON ZERO         BB429410
036E 00 44000FB3     BSI L F000        ALL 0 THRU Q FAILED    BB429420
0370 0  3076         OC    /3076        ERR ID                BB429430
0371 00 44000FB2 G340 BSI L F00E        CK LOCK ON ERRCR      BB429440
0373 0  70F4         MOX   A340          LOOP                 BB429450
0374 0  1B00         RTE   16            NOW A=/FFFF  Q=/0000 BB429460
0375 0  FOOA         EOR   N341          ZERO WITH /FFFF      BB429470
0376 00 4C1B037B     BSC L G342,+-     BRANCH ON ZERO         BB429480
0378 00 44000FB3     BSI L F000        ALL 1 THRU Q FAILED    BB429490
037A 0  3077         DC    /3077        ERR ID                BB429500
037B 00 44000FDE G342 BSI L F005        CK LCCK ON ERROR      BB429510
037D 0  70EA         MDX   A34C          LOOP                 BB429520
037E 0  7002         MDX   A380          EXIT TO NEXT ROUTINE BB429530
037F 0  0000     N340 OC    /0000                             BB429540
0380 0  FFFF     N341 OC    /FFFF                             BB429550
                *                                             BB429560
                *        TEST OF SRT OPERATION                BB429570
                *                                             BB429580
                ***************************************.******* BB429590
0381 0  C055     A3B0 LO    N3B0          LD /8000            BB429600
0382 0  1BA0         SRT   32            NOW  A=/FFFF Q=/FFFF BB429610
0383 0  F054         EOR   N381          EOR IN /FFFF         BB429620
03B4 00 4C1B0389     BSC L G380,+-     BRANCH ON ZERO         BB429630
0386 0U 44000FB3     BSI L F000        SRT 32-A REG FAILEO    BB429640
038B 0  307B         OC    /3078        ERR IO                BB429650
0389 00 44000FB2 G380 BSI L F00E        CK LOCK ON ERROR      BB429660
038B 0  70F5         MDX   A380          LOOP                 BB429670
038C 0  1BD0         RTE   16            NOW A=/FFFF  Q=/0000 BB429680
03B0 0  F04A         EOR   N3B1          EOR IN /FFFF         BB429690
038E 00 4C1B0393     BSC L G382,+-     BRANCH CN ZERO         BB429700
0390 00 44000FB3     BSI L F000        SRT 32-Q REG FAILED    BB429710
0392 0  3079         DC    /3079        ERR ID                BB429720
0393 00 44000FOE G382 BSI L F005        CK LOCK ON ERROR      BB429730
0395 0  70EB         MOX   A380          LOOP                 BB429740
                ****************************.***************    BB429750
0396 0  C042     A384 LD    N3B2          LD /4000            BB429760
0397 0  18A0         SRT   32            NOW A=/0000  Q=/0000 BB429770
0399 00 4C1B039D     BSC L G384,+-     BRANCH ON ZERO         BB42978D
039A 00 44000FB3     BSI L F000        SRT 32-A REG FAILED    BB429790
039C 0  307A         OC    /307A        ERR ID                BB429800
039D 00 44000FOE G384 BSI L F005        CK LOCK ON ERROR      BB429810
039F 0  70F6         MOX   A384          LOOP                 BB429820
03A0 0  18D0         RTE   16            NOW A=/0000  Q=/0000 BB429830
03A1 00 4C1B03A6     BSC L G386,+-     BRANCH ON ZERO         BB429840
03A3 00 44000FB3     BSI L F000        SRT 32-Q REG FAILEO    BB429850
03A5 0  307B         OC    /307B        ERR IO                BB429860
03A6 00 44000FOE G386 BSI L F005        CK LOCK ON ERROR      BB429870
03AB 0  70ED         MDX   A384          LOOP                 BB429880
                *****************************.***************   BB429890
03A9 0  C030     A38B LD    N3B3          LD /5555            BB429900
03AA 0  1B8F         SRT   15            NOW  A=/0000 C=/0000 BB429910
03AB 00 4C1B03B0     BSC L G3BB,+-     BRANCH ON ZERO         BB429920
03AD 00 44000FB3     BSI L F000        SRT 15-A REG FAILEO    BB429930
03AF 0  307C         OC    /307C        ERR ID                BB429940
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0380 00 44000FB2   G38B  BSI  L  F00E      CK LOCK ON ERROR         8B429950
0382 0  70F6              MDX    A388       LOOP                     8B429960
0383 0  1800              RTE    16         NOW A=/AAAA  Q=/0000     8B429970
0384 0  F026              EOR    N384       ZERO WITH /AAAA          8B429980
0385 00 4C1803BA          BSC  L  G38A,+-   BRANCH ON ZERO           8B429990
0387 00 44000F83          BSI  L  F000      SRT 15-Q REG FAILED      8B430000
0389 0  3070              DC     /3070      ERR ID                   8B430010
038A 00 44000FDE   G38A  BSI  L  F005      CK LOCK ON ERROR         8B430020
038C 0  70EC              MDX    A388       LOOP                     8B430030
                          ****************************************   8B430040
                                                                     8B430050
CORE    DATA OR    *LA- OPER-                                        8B430060
ADDR    INSTRUCTION *BEL ATION FT OPERANDS + REMARKS   ID+SEQ= AT RIGHT 8B430070
        ****************************************                     8B430080
038D 0  C01C       A38C  LD     N383       LD /5555                 8B430090
038E 0  1880              SRT    0          NOW A=/5555  Q=/0000     8B430100
038F 0  1882              SRT    2          NOW  A=/1555  Q=/4000    9B430110
03C0 0  1884              SRT    4                     /0155  /5400  8B430120
03C1 0  1886              SRT    6                     /0005  /5530  8B430130
03C2 0  1888              SRT    8                     /0000  /0555  8B430140
03C3 0  188A              SRT    10                    /0000  /0001  8B430150
03C4 00 4C1803C9          BSC  L  G38C,+-   BRANCH ON ZERO           8B430160
03C6 00 44000F83          BSI  L  F000      SERIES SRT FAILED        8B430170
03C8 0  307E              DC     /307E      ERR ID                   8B430180
03C9 00 A4000FB2   G38C  BSI  L  F00E      CK LOCK ON ERROR         8B430190
03CB 0  70F1              MDX    A38C       LOOP                     8B430200
03CC 0  1800              RTE    16         NOW A=/0001  Q=/0000     8B430210
03CD 0  F00E              EOR    N385       ZERO WITH /0001          8B430220
03CE 00 4C1803D3          BSC  L  G38E,+-   BRANCH ON ZERO           8B430230
03D0 00 44000F83          BSI  L  F000      SERIES SRT FAILED        8B430240
03D2 0  307F              DC     /307F      ERR ID                   8B430250
03D3 00 44000FDE   G38E  BSI  L  F005      CK LOCK ON ERROR         8B430260
03D5 0  70E7              MDX    A38C       LOOP                     8B430270
03D6 0  7006              MDX    A3C0       EXIT TO NEXT ROUTINE     8B430280
03D7 0  8000       N380  DC     /8000                               8B430290
03D8 0  FFFF       N381  DC     /FFFF                               8B430300
03D9 0  4000       N382  DC     /4000                               8B430310
03DA 0  5555       N383  DC     /5555                               8B430320
03DB 0  AAAA       N384  DC     /AAAA                               8B430330
03DC 0  0001       N385  DC     /0001                               8B430340
                   *                                                8B430350
                   *                  TEST OF RTE OPERATION         8B430360
                   *                                                8B430370
                   ****************************************          8B430380
03DD 0  C035       A3C0  LD     N3C1       LD /AAAA                 8B430390
03DE 0  1800              RTE    16         NOW A=/0000  Q=/AAAA     8B430400
03DF 0  C032              LD     N3C0       NOW  A=/5555  Q=/AAAA    8B430410
03E0 0  18CF              RTE    15         NOW  A=/5554  Q=/AAAB    8B430420
03E1 0  F034              EOR    N3C4       ZERO WITH /5554          8B430430
03E2 00 4C1803E7          BSC  L  G3C0,+-   BRANCH ON ZERO           8B430440
03E4 00 44000F83          BSI  L  F000      RTE 15-Q TO A FAILED     8B430450
03E6 0  3080              DC     /3080      ERR ID                   8B430460
03E7 00 44000FB2   G3C0  BSI  L  F00E      CK LOCK ON ERROR         8B430470
03E9 0  70F3              MDX    A3C0       LOOP                     8B430480
03EA 0  1800              RTE    16         NOW A=/AAA8  Q=/5554     8B430490
03EB 0  F028              EOR    N3L5       ZERO WITH /AAAB          8B430500
03EC 00 4C1803F1          BSC  L  G3C2,+-   BRANCH ON ZERO           8B430510
03EE 00 44000F83          BSI  L  F000      RTE 15-A TO Q FAILED     8B430520
03F0 0  3081              DC     /3081      ERR ID                   8B430530
03F1 00 44000FDE   G3C2  BSI  L  F005      CK LOCK ON ERROR         8B430540
03F3 0  70E9              MDX    A3C0       LOOP                     8B430550
                          ****************************************   8B430560
                                                                     8B430570
CORE    DATA OR    *LA- OPER-                                        8B430580
ADDR    INSTRUCTION *BEL ATION FT OPERANDS + REMARKS   ID+SEQ= AT RIGHT 8B430590
        ****************************************                     8B430600
03F4 0  C020       A3C4  LD     N3C3       LD /8000                 8B430610
03F5 0  1800              RTE    16         NOW A=/XXXX  Q=/8000     8B430620
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03F6 0  C010              LD     N3C2       LD /0000                 8B430630
03F7 0  18C0              RTE    0          NOW  A=/0000  Q=/8000    8B430640
03F8 0  18C1              RTE    1                     /0000  /4000  8B430650
03F9 0  18C2              RTE    2                     /0000  /1000  8B430660
03FA 0  18C3              RTE    3                     /0000  /0200  8B430670
03FB 0  18C4              RTE    4                     /0000  /0020  8B430680
03FC 00 18C5              RTE    5                     /0000  /0002  8B430690
03FD 0  18C6              RTE    6                     /0400  /0000  8B430700
03FE 0  18CA              RTE    10                    /0001  /0000  8B430710
03FF 0  F018              EOR    N3C6       ZERO WITH /0001          8B430720
0400 00 4C180405          BSC  L  G3C4,+-   BRANCH ON ZERO           8B430730
0402 00 44000F83          BSI  L  F000      SERIES RTE FAILED        8B430740
0404 0  3082              DC     /3082      ERR ID                   8B430750
0405 00 44000FB2   G3C4  BSI  L  F00E      CK LOCK ON ERROR         8B430760
0407 0  70EC              MDX    A3C4       LOOP                     8B430770
0408 0  1800              RTE    16         NOW A=/0000  Q=/0001     8B430780
0409 00 4C18040E          BSC  L  G3C6,+-   BRANCH ON ZERO           8B430790
040B 00 44000F83          BSI  L  F000      SERIES RTE FAILED        8B430800
040D 0  3083              DC     /3083      ERR ID                   8B430810
040E 00 44000FDE   G3C6  BSI  L  F005      CK LOCK ON ERROR         8B430820
0410 0  70E4              MDX    A3C4       LOOP                     8B430830
0411 0  7007              MDX    A400       EXIT TO NEXT ROUTINE     8B430840
0412 0  5555       N3C0  DC     /5555                               8B430850
0413 0  AAAA       N3C1  DC     /AAAA                               8B430860
0414 0  0000       N3C2  DC     /0000                               8B430870
0415 0  8000       N3C3  DC     /8000                               8B430880
0416 0  5554       N3C4  DC     /5554                               8B430890
0417 0  AAAB       N3C5  DC     /AAAB                               8B430900
0418 0  0001       N3C6  DC     /0001                               8B430910
                   *                                                8B430920
                   *                  TEST OF SLA OPERATION         8B430930
                   *                                                8B430940
                   ****************************************          8B430950
0419 00 C40004BD   A400  LD   L  N400       LD /FFFF                8B430960
041B 0  1800              RTE    16         NOW  A=/XXXX  Q=/FFFF    8B430970
041C 00 C40004BD          LD   L  N400       LD /FFFF               8B430980
041E 0  1010              SLA    16         NOW A=/0000  Q=/FFFF     8B430990
041F 00 4C020424          BSC  L  G404,C     BR ON CARRY            8B431000
0421 00 44000F83          BSI  L  F000      SLA 16-CARRY FAILED      8B431010
0423 0  3085              DC     /3085      ERR ID                   8B431020
0424 00 44000FB2   G404  BSI  L  F00E      CK LOCK ON ERROR         8B431030
0426 0  70F2              MDX    A400       LOOP                     8B431040
0427 00 4C18042C          BSC  L  G400,+-   BRANCH ON ZERO           8B431050
0429 00 44000F83          BSI  L  F000      SLA 16-A REG FAILED      8B431060
042B 0  3084              DC     /3084      ERR ID                   8B431070
042C 00 44000FB2   G400  BSI  L  F00E      CK LOCK ON ERROR         8B431080
042E 0  70EA              MDX    A400       LOOP                     8B431090
042F 0  1800              RTE    16         NOW A=/FFFF  Q=/0000     8B431100
0430 00 F400048D          EOR  L  N400       ZERO WITH /FFFF        8B431110
0432 00 4C180437          BSC  L  G406,+-    BRANCH ON ZERO          8B431120
0434 00 44000F83          BSI  L  F000      SLA 16-AFFECTED Q REG    8B431130
0436 0  3086              DC     /3086      ERR ID                   8B431140
0437 00 44000FDE   G406  BSI  L  F005      CK LOCK ON ERROR         8B431150
0439 0  700F              MDX    A400       LOOP                     8B431160
                          ****************************************   8B431170
                                                                     8B431180
CORE    DATA OR    *LA- OPER-                                        8B431190
ADDR    INSTRUCTION *BEL ATION FT OPERANDS + REMARKS   ID+SEQ= AT RIGHT 8B431210
        ****************************************                     8B431210
043A 00 C40004C2   A408  LD   L  N405       LD /0000                8B431220
043C 0  1800              RTE    16         NOW A=/XXXX  Q=/0000     8B431230
043D 00 C40004C3          LD   L  N406       /FFFE  /0000           8B431240
043F 0  1010              SLA    16                 /0000  /0000     8B431250
0440 00 4C020443          BSC  L  G407,C     BR ON CARRY            8B431260
0442 0  7003              MDX    G40C                               8B431270
0443 00 44000F83   G407  BSI  L  F000      SLA 16- CARRY FAILED     8B431280
0445 0  3088              DC     /3088      ERR ID                   8B431290
0446 00 44000FB2   G40C  BSI  L  F00E      CK LOCK ON ERROR         8B431300
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0448 0  70F1         MDX     A408    LOOP                         8B431310
0449 00 4C18044E     BSC L   G408,+-  BRANCH ON ZERO              8B431320
044B 00 44000F83     BSI L   F000    SLA 16-A REG FAILED          8B431330
044D 0  3087         DC      /3087   ERR 10                       8B431340
044E 00 44000FB2 G40B BSI L  F00E    CK LOCK ON ERROR             8B431350
0450 0  70E9         MDX     A408    LOOP                         8B431360
0451 0  1800         RTE     16      NOW A=/0000  Q=/0000         8B431370
0452 00 4C180457     BSC L   G40E,+-  BRANCH ON ZERO              8B431380
0454 00 44000F83     BSI L   F000    SLA 16-AFFECTED Q REG        8B431390
0456 0  3089         DC      /3089   EPR 10                       8B431400
0457 00 44000FDE G40E BSI L  F005    CK LOCK ON ERROR             8B431410
0459 0  70E0         MDX     A408    LOOP                         8B431420
      *************************************************           8B431430
                                                                  8B431440
045A 0  C067  8400   LD      N405    LD /0000                     8B431440
045B 0  1800         RTE     15      NOW  A=/XXXX  Q=/0000        8B431450
045C 0  C063         LD      N403    LD /AAAA                     8B431460
045D 0  1001         SLA     1       NOW A=/5554  Q=/0000         8B431470
045E 00 4C020463     BSC L   H402,C  BRANCH ON CARRY              8B431480
0460 00 44000F83     BSI L   F000    SLA 1-CARRY FAILED           8B431490
0462 0  3088         DC      /3088   ERR 10                       8B431500
0463 00 44000F82 H402 BSI L  F00E    CK LOCK ON ERROR             8B431510
0465 0  70F4         MDX     8400    LOOP                         8B431520
0466 0  F05A         EOR     N404    ZERO WITH /5554              8B431530
0467 00 4C18046C     BSC L   H400,+-  BRANCH ON ZERO              8B431540
0469 00 44000FB3     BSI L   F000    SLA 1-A REG FAILED           8B431550
046B 0  308A         DC      /308A   ERR 10                       8B431560
046C 00 44000F82 H400 BSI L  F00E    CK LOCK ON ERROR             8B431570
046E 0  70E8         MDX     8400    LOOP                         8B431580
046F 0  1800         RTE     16      NOW A=/0000  Q=/5554         8B431590
0470 00 4C180475     BSC L   H404,+-  BRANCH ON ZERO              8B431600
0472 00 44000F83     BSI L   F000    SRA 1-AFFECTED Q REG         8B431610
0474 0  308C         DC      /308C   ERR 10                       8B431620
0475 00 44000F0E H404 BSI L  F005    CK LOCK ON ERROR             8B431630
0477 0  70E2         MDX     8400    LOOP                         8B431640
      *************************************************           8B431650
0478 0  C049  8406   LD      N405    LD /0000                     8B431660
0479 0  1800         RTE     16      NOW  A=/XXXX  Q=/0000        8B431670
047A 0  C044         LD      N402    LD /5555                     8B431680
047B 0  1001         SLA     1       NOW A=/AAAA  Q=/0000         8B431690
047C 00 4C02047F     BSC L   H407,C  BR ON CARRY                  8B431700
047E 0  7003         MDX     H405                                 8B431710
047F 00 44000F83 H407 BSI L  F000    SLA 1-CARRY FAILED           8B431720
0481 0  308E         DC      /308E   ERR 10                       8B431730
0482 00 44000F82 H405 BSI L  F00E    CK LOCK ON ERROR             8B431740
0484 0  70F3         MDX     8406    LOOP                         8B431750
0485 0  F03A         EOR     N403    ZERO WITH /AAAA              8B431760
0486 00 4C180468     BSC L   H406,+-  BRANCH ON ZERO              8B431770
0488 00 44000F83     BSI L   F000    SLA 1-A REG FAILED           8B431780
048A 0  308D         DC      /308D   ERR 10                       8B431790
048B 00 44000FB2 H406 BSI L  F00E    CK LOCK ON ERROR             8B431800
048D 0  70EA         MDX     8406    LOOP                         8B431810
048E 0  1800         RTE     16      NOW  A=/0000  Q=/AAAA        8B431820
048F 00 4C180494     BSC L   H408,+-  BRANCH ON ZERO              8B431830
0491 00 44000F83     BSI L   F000    SLA 1-AFFECTED Q REG         8B431840
0493 0  308F         DC      /308F   ERR 10                       8B431850
0494 00 44000F0E H408 BSI L  F005    CK LOCK ON ERROR             8B431860
0496 0  70E1         MDX     8406    LOOP                         8B431870
      *************************************************           8B431880
                                                                  8B431890
CORE  DATA OR  *LA- OPER-                                         8B431900
ADDR  INSTRUCTION *BEL ATION FT OPERANDS + REMARKS   ID+SEQ= AT RIGHT 8B431910
      *************************************************           8B431920
0497 0  C02A  840A   LD      N405    LD /0000                     8B431930
0498 0  1800         RTE     16      NOW A=/XXXX  Q=/0000         8B431940
0499 0  C024         LD      N401    LD /0001                     8B431950
049A 0  6101         LOX   1 1                                    8B431960
049B 0  6204         LOX   2 4                                    8B431970
049C 0  6303         LOX   3 3                                    8B431980
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0490 0  1000         SLA     0       NOW A=/0001  Q=/0000         8B431990
049E 0  1100         SLA   1 0           /0002    /0000           8B432000
049F 0  1002         SLA     2             /000B    /0000         8B432010
04A0 0  1200         SLA   2 0           /0080    /0000           8B432020
04A1 0  1006         SLA     6             /2000    /0000         8B432030
04A2 0  1300         SLA   3 0           /0000    /0000           8B432040
04A3 00 4C0204AB     BSC L   H400,C  BRANCH ON CARRY              8B432050
04A5 00 44000F00     BSI L   F000    COMB SLA-CARRY FAILED        8B432060
04A7 0  3091         DC      /3091   ERR 10                       8B432070
04A8 00 44000FB2 H400 BSI L  F00E    CK LOCK ON ERROR             8B432080
04AA 0  70EC         MDX     840A    LOOP                         8B432090
04AB 00 4C1804B0     BSC L   H40A,+-  BRANCH ON ZERO              8B432100
04AD 00 44000F83     BSI L   F000    COMB SLA-A REG FAILED        8B432110
04AF 0  3090         DC      /3090   ERR 10                       8B432120
04B0 00 44000F82 H40A BSI L  F00E    CK LOCK ON ERROR             8B432130
04B2 0  70E4         MDX     840A    LOOP                         8B432140
04B3 0  1800         RTE     16                                   8B432150
04B4 00 4C1804B9     BSC L   H40E,+-  BRANCH ON ZERO              8B432160
04B6 00 44000F83     BSI L   F000    COMB SLA-AFFECTED Q          8B432170
04B8 0  3092         DC      /3092   ERR 10                       8B432180
04B9 00 44000F0E H40E BSI L  F005    CK LOCK ON ERROR             8B432190
04BB 0  70DB         MDX     840A    LOOP                         8B432200
04BC 0  7007         MDX     A440    EXIT TO NEXT ROUTINE         8B432210
04BD 0  FFFF  N400   DC      /FFFF                                8B432220
04BE 0  0001  N401   DC      /0001                                8B432230
04BF 0  5555  N402   DC      /5555                                8B432240
04C0 0  AAAA  N403   DC      /AAAA                                8B432250
04C1 0  5554  N404   DC      /5554                                8B432260
04C2 0  0000  N405   DC      /0000                                8B432270
04C3 0  FFFE  N406   DC      /FFFE                                8B432280
      *                                                           8B432290
      *          TEST OF SLT OPERATION                            8B432300
      *                                                           8B432310
      *************************************************           8B432320
04C4 0  C07E  A440   LD      N440    LD /0001                     8B432330
04C5 0  1800         RTE     16      NOW A=/XXXX  Q=Q=/0001       8B432340
04C6 0  C070         LD      N441    LD /0000                     8B432350
04C7 0  10A0         SLT     32            /0000  Q=/0000         8B432360
04C8 00 4C0204C0     BSC L   G442,C  BRANCH ON CARRY              8B432370
04CA 00 44000F83     BSI L   F000    SLT 32-CARRY FAILED          8B432380
04CC 0  3094         DC      /3094   ERR 10                       8B432390
04CD 00 44000F82 G442 BSI L  F00E    CK LOCK ON ERROR             8B432400
04CF 0  70F4         MDX     A440    LOOP                         8B432410
04D0 00 4C1804D5     BSC L   G440,+-  BRANCH ON ZERO              8B432420
04D2 00 44000F83     BSI L   F000    SLT 32-A REG FAILED          8B432430
04D4 0  3093         DC      /3093   ERR 10                       8B432440
04D5 00 44000F82 G440 BSI L  F00E    CK LOCK ON ERROR             8B432450
04D7 0  70EC         MDX     A440    LOOP                         8B432460
04D8 0  1800         RTE     16      NOW A=/0000  Q=/0000         8B432470
04D9 00 4C18040E     BSC L   G443,+-  BRANCH ON ZERO              8B432480
04DB 00 44000F83     BSI L   F000    SLT 32-Q REG FAILED          8B432490
04DD 0  3095         DC      /3095   ERR 10                       8B432500
04DE 00 44000F0E G443 BSI L  F005    CK LOCK ON ERROR             8B432510
04E0 0  70E3         MDX     A440    LOOP                         8B432520
      *************************************************           8B432530
      *************************************************           8B432540
CORE  DATA OR  *LA- OPER-                                         8B432550
ADDR  INSTRUCTION *BEL ATION FT OPERANDS + REMARKS   ID+SEQ= AT RIGHT 8B432560
      *************************************************           8B432570
04E1 0  C063  A444   LD      N442    LD /FFFF                     8B432580
04E2 0  1800         RTE     16      NOW A=/XXXX  Q=/FFFF         8B432590
04E3 0  C060         LD      N441    LD /0000                     8B432600
04E4 0  109D         SLT     16      NOW A=/FFFF  Q=/0000         8B432610
04E5 00 4C0204E8     BSC L   G446,C  BR ON CARRY                  8B432620
04E7 0  7003         MDX     G447                                 8B432630
04E8 00 44000FB3 G446 BSI L  F000    SLT 16-CARRY FAILED          8B432640
04EA 0  3097         DC      /3097   ERR 10                       8B432650
04EB 00 44000F82 G447 BSI L  F00E    CK LOCK ON ERROR             8B432660
```

PROCESSOR-CONTROLLER FUNCTION TEST

```
04ED 0  70F3        MDX     A444    LOOP                    88432670
04EE 0  F056        EOR     N442    ZERO WITH /FFFF         88432680
04EF 00 4C1804F4    BSC  L  G444,+- BRANCH ON ZERO          88432690
04F1 00 44000F83    BSI  L  F000    SLT 16-A REG FAILED     88432700
04F3 0  3096        DC      /3096   ERR ID                  88432710
04F4 00 44000F82 G444 BSI L  F00E    CK LOCK ON ERROR        88432720
04F6 0  70EA        MDX     A444    LOOP                    88432730
04F7 0  1800        RTE     16      NOW A=/0000  Q=/0000    88432740
04F8 00 4C1804FD    BSC  L  G448,+- BRANCH ON ZERO          88432750
04FA 00 44000F83    BSI  L  F000    SLT 16-Q REG FAILED     88432760
04FC 0  3098        DC      /3098   ERR ID                  88432770
04FD 00 44000FDE G448 BSI L  F005    CK LOCK ON ERROR        88432780
04FF 0  70E1        MDX     A444    LOOP                    88432790
                    ****************************************  88432800
0500 0  C045    A44A LD     N443    LD /5555                88432810
0501 0  18D0        RTE     16      NOW  A=/XXXX  Q=/5555   88432820
0502 0  C041        LD      N441       /0000    /5555       88432830
0503 0  108F        SLT     15         /2AAA    /8000       88432840
0504 00 4C020507    BSC  L  G44C,C  BR ON CARRY             88432850
0506 0  7003        MDX     G44D                            88432860
0507 00 44000F83 G44C BSI L  F000    SLT 15-CARRY FAILED     88432870
0509 0  309A        DC      /309A   ERR ID                  88432880
050A 00 44000F82 G44D BSI L  F00E    CK LOCK ON ERROR        88432890
050C 0  70F3        MDX     A44A    LOOP                    88432900
050D 0  F039        EOR     N444    ZERO WITH /2AAA         88432910
050E 00 4C180513    BSC  L  G44A,+- BRANCH ON ZERO          88432920
0510 00 44000F83    BSI  L  F000    SLT 15-A REG FAILED     88432930
0512 0  3099        DC      /3099   ERR ID                  88432940
0513 00 44000F82 G44A BSI L  F00E    CK LOCK ON ERROR        88432950
0515 0  70EA        MDX     A44A    LOOP                    88432960
0516 0  1800        RTE     16      NOW  A=/8000  G=/0000   88432970
0517 0  F030        EOR     N445    ZERO WITH /8000         88432980
0518 00 4C18050E    BSC  L  G44E,+- BRANCH ON ZERO          88432990
051A 00 44000F83    BSI  L  F000    SLT 15-Q REG FAILED     88433000
051C 0  309B        DC      /3098   ERR ID                  88433010
051D 00 44000FDE G44E BSI L  F005    CK LOCK ON ERROR        88433020
051F 0  70E0        MDX     A44A    LOOP                    88433030
                    ****************************************  88433040
                                                            88433050
CORE  DATA OR   *LA- OPER-                                  88433060
ADDR   INSTRUCTION *BEL ATION FT OPERANDS + REMARKS  ID+SEQ= AT RIGHT 88433070
                                                            88433080
0520 0  C022    B440 LD     N440    LD /0001                88433090
0521 0  18D0        RTE     16      NOW  A=/XXXX  C=/0001   88433100
0522 0  C05A        LD      N441    LD /0000                88433110
0523 0  1080        SLT     0       NOW  A=/0000  Q=/0001   88433120
0524 0  1081        SLT     1          /0000    /0002       88433130
0525 0  1085        SLT     5          /0000    /0040       88433140
0526 0  1087        SLT     7          /0000    /2000       88433150
0527 0  1089        SLT     9          /0040    /0000       88433160
0528 0  108A        SLT     10         /0000    /0000       88433170
0529 00 4C02052E    BSC  L  H443,C  BR ON CARRY             88433180
0528 00 44000F83    BSI  L  F000    COMB SLT-CARRY FAILED   88433190
052D 0  3090        DC      /309D   ERR ID                  88433200
052E 00 44000F82 H443 BSI L  F00E    CK LOCK ON ERROR        88433210
0530 0  70EF        MDX     B440    LOOP                    88433220
0531 00 4C180536    BSC  L  H440,+  BRANCH ON ZERO          88433230
0533 00 44000F83    BSI  L  F000    COMB SLT-A REG FAILE    88433240
0535 0  309C        DC      /309C   ERR ID                  88433250
0536 00 44000F82 H440 BSI L  F00E    CK LOCK ON ERROR        88433260
0538 0  70E7        MDX     B440    LOOP                    88433270
0539 0  18D0        RTE     16      NOW A=/0000  Q=/0000    88433280
053A 00 4C18053F    BSC  L  H444,+- BRANCH ON ZERO          88433290
053C 00 44000F83    BSI  L  F000    COMB SLT-Q REG FAILE    88433300
053E 0  309E        DC      /309E   ERR ID                  88433310
053F 00 44000FDE H444 BSI L  F005    CK LOCK ON ERROR        88433320
0541 0  700E        MDX     B440    LOOP                    88433330
0542 0  7006        MDX     A480    EXIT TO NEXT ROUTINE    88433340
```

PROCESSOR-CONTROLLER FUNCTION TEST

```
0543 0  0001    N440 DC     /0001                           88443350
0544 0  0000    N441 DC     /0000                           88443360
0545 0  FFFF    N442 DC     /FFFF                           88443370
0546 0  5555    N443 DC     /5555                           88443380
0547 0  2AAA    N444 DC     /2AAA                           88443390
0548 0  8000    N445 DC     /8000                           88443400
                *                                           88443410
                *           TEST OF STO OPERATION           88443420
                *                                           88443430
                ****************************************    88443440
0549 0  C019    A480 LD     N480    LD /0000                88443450
054A 0  001A        STO     N482    STO /0000               88443460
054B 0  C018        LD      N481    LD /FFFF                88443470
054C 0  C018        LD      N462    LD /0000                88443480
054D 00 4C180552    BSC  L  G480,+- BRANCH ON ZERO          88443490
054F 00 44000F83    BSI  L  F000    STO ZEROS FAILED        88443500
0551 0  309F        DC      /309F   EPR ID                  88443510
0552 00 44000FDE G480 BSI L  F005    CK LOCK ON ERROR        88443520
0554 0  70F4        MDX     A480    LOOP                    88443530
                    ****************************************  88443540
0555 0  C00E    A482 LD     N481    LD /FFFF                88443550
0556 0  000E        STO     N482                            88443560
0557 0  C00B        LD      N480    LD /0000                88443570
0558 0  C00C        LD      N482    LD /FFFF                88443580
0559 0  F00A        EOR     N481    ZERO WITH /FFFF         88443590
055A 00 4C18055F    BSC  L  G482,+- BRANCH ON ZERO          88443600
055C 00 44000F83    BSI  L  F000    STO ONES FAILED         88443610
055E 0  30A0        DC      /30A0   ERR ID                  88443620
055F 00 44000FDE G482 BSI L  F005    CK LOCK ON ERROR        88443630
0561 0  70F3        MDX     A482    LOOP                    88443640
0562 0  7003        MDX     A4C0    EXIT TO NEXT ROUTINE    88443650
0563 0  0000    N480 DC     /0000                           88443660
0564 0  FFFF    N481 DC     /FFFF                           88443670
0565 0  FFFF    N482 DC     /FFFF                           88443680
                *                                           88443690
                *           TEST OF STS OPERATION           88443700
                *                                           88443710
                ****************************************    88443720
                                                            88443730
CORE  DATA OR   *LA- OPER-                                  88443740
ADDR   INSTRUCTION *BEL ATION FT OPERANDS + REMARKS  ID+SEQ= AT RIGHT 88443750
                                                            88443760
0566 0  2000    A4C0 LDS    0       SET C AND OF OFF        88443770
0567 0  2858        STS     N4C0                            88443780
0568 0  C05A        LD      N4C0                            88443790
0569 00 4C18056E    BSC  L  G4C0,+-                         88443800
0568 00 44000F83    BSI  L  F000    STS FAILED TO STORE     88443810
056D 0  30A1        DC      /30A1   ERR ID                  88443820
056E 00 44000F0F G4C0 BSI L  F005    CK LOCK ON ERROR        88443830
0570 0  70F5        MDX     A4C0    LOOP                    88443840
                    ****************************************  88443850
0571 0  C0FF    A4C2 LD     A4C2                            88443860
0572 0  2003        LDS     3                               88443870
0573 0  284F        STS     N4C0                            88443880
0574 0  F0FC        EOR     A4C2                            88443890
0575 00 4C18057A    BSC  L  H4C3,+- BRANCH ON ZERO          88443900
0577 00 44000F83    BSI  L  F000    ACC GONE AFT LDS-STS    88443910
0579 0  30A3        DC      /30A3   ERR ID                  88443920
057A 00 4C02057D H4C3 BSC L  H4C2,C  BR IF CARRY IS NO       88443930
057C 0  7003        MDX     G4C2                            88443940
057D 00 44000F83 H4C2 BSI L  F000    STS NOT CLEAR CARRY     88443950
057F 0  30A2        DC      /30A2   ERR ID                  88443960
0580 00 44000F82 G4C2 BSI L  F00E    CK LOCK ON ERROR        88443970
0582 0  70EE        MDX     A4C2    LOOP                    88443980
0583 00 4C010586    BSC  L  H4C4,C  BR IF CARRY IS ON       88443990
0585 0  7003        MDX     G4C4                            88444000
0586 00 44000F83 H4C4 BSI L  F000    STS NOT CLEAR OVERFLW   88444010
0588 0  30A4        DC      /30A4   ERR ID                  88444020
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0589 00 44000FB2   G4C4 BSI  L FOOE      CK LOCK ON ERROR            88434030
058B 0  70E5             MOX   A4C2       LOOP                        88434040
058C 0  C036             LO    N4C0                                   88434050
058D 0  F036             EOR   N4C1                                   88434060
058E 00 4C180593         BSC  L G4C6,+-   BRANCH CN ZERO             88434070
0590 00 44000F83         BSI  L FOOO      STS FAILED TO STORE        88434080
0592 0  30A5             DC    /30A5      ERR IO                      88434090
0593 00 44000FDE    G4C6 BSI  L FOO5      CK LOCK ON ERROR           88434100
0595 0  700B             MOX   A4C2       LOOP                        88434110
                   ****************************************           88434120
0596 0  2002        A4CB LOS   2          SET C ON    OF OFF          88434130
0597 0  282B             STS   N4C0       SET /0002 IN N4C0           88434140
0598 0  2B2C             STS   N4C2       SET /0002 IN N4C2           88434150
0599 0  C029             LO    N4C0       LO /0002                    88434160
059A 0  F02B             EOR   N4C3       ZERO WITH /0002             88434170
059B 00 4C1805A0         BSC  L G4C8,+-   BRANCH ON ZERO             88434180
059D 00 44000F83         BSI  L FOOO      STS FAILEO TO STORE        88434190
059F 0  30A6             OC    /30A6      ERR IO                      8843420C
05A0 00 44000FB2    G4C8 BSI  L FOOE      CK LOCK ON ERRCR           88434210
05A2 0  70F3             MOX   A4C8       LOOP                        88434220
05A3 0  C021             LO    N4C2       LD /0002                    88434230
05A4 00 4C1805A9         BSC  L G4CA,+-   BRANCH ON ZERO             88434240
05A6 00 44000FB3         BSI  L FOO6      STS NOT CLEAR CARRY        88434250
05A8 0  30A7             DC    /30A7      ERR ID                      88434260
05A9 00 44000FDE    G4CA BSI  L FOC5      CK LOCK ON ERROR           88434270
05AB 0  70EA             MOX   A4C8       LOOP                        884342B0
                   ****************************************           88434290
05AC 0  2001        A4CC LDS   1          SET C-OFF  OF - ON          88434300
05AD 0  2B15             STS   N4C0       SET /0001 IN N4C0           88434310
05AE 0  2B16             STS   N4C2       SET /0001 IN N4C2           88434320
05AF 0  C013             LO    N4C0       LO /0001                    88434330
05B0 0  F016             EOR   N4C4       ZERO WITH /0001             8843434U
05B1 00 4C1805B6         BSC  L G4CC,+-   BRANCH ON ZERO             88434350
05B3 00 44000F83         BSI  L FOOO      STS FAILED TO STORE        88434360
05B5 0  30AB             OC    /30AB      ERR IO                      88434370
05B6 00 44000FB2    G4CC BSI  L FOOE      CK LOCK ON ERROR           88434380
05B8 0  70F3             MDX   A4CC       LOOP                        88434390
05B9 0  C00B             LO    N4C2       LO /0001                    88434400
05BA 00 4C1805BF         BSC  L G4CD,+-   BRANCH ON ZERO             88434410
05BC 00 44000FB3         BSI  L FOOO      STS NOT CLEAR OVERFL       88434420
05BE 0  30A9             OC    /30A9      ERR ID                      88434430
05BF 00 44000FDE    G4CD BSI  L FOO5      CK LOCK ON ERROR           88434440
05C1 0  70EA             MOX   A4CC       LOOP                        88434450
05C2 0  7005             MDX   A500       EXIT TO NEXT ROUTINE       88434460
05C3 0  0003        N4C0 OC    /0003                                  88434470
05C4 0  0003        N4C1 DC    /0003                                  88434480
05C5 0  0000        N4C2 OC    /0000                                  88434490
05C6 0  0002        N4C3 DC    /0002                                  88434500
05C7 0  0001        N4C4 DC    /0001                                  88434510
                   *                                                  88434520
                   *                 TEST OF BSC OPERATION            88434530
                   *                                                  88434540
                   ****************************************           88434550
****************************************************************     88434560
CORE    OATA OR     *LA- OPER-                                        88434570
ADDR    INSTRUCTION *BEL ATION FT OPERANOS + REMARKS   IO+SEQ= AT RIGHT 88434580
****************************************************************     88434590
05CB 0  2003        A500 LDS   3          SET C ANO OF ON             88434600
05C9 00 C400065C         LO   L N500      LO /B001                   98434610
05CB 0  4B2F             BSC   O+EZC      SK IF OF OFF, PLUS, EVEN,  88434620
                   *                      * ZERO OR CARRY OFF.       88434630
05CC 0  7003             MOX   G500                                   88434640
05CD 00 44000FB3         BSI  L FOOO      BSC SKPC-SHOULO NOT        88434650
05CF 0  30AA             OC    /30AA      ERR IO                      88434660
05D0 00 44000FDE    G500 BSI  L FOO5      CK LOCK ON ERROR           88434670
05D2 0  70F5             MOX   A500       LOOP                        88434680
                   ****************************************           88434690
05D3 0  2003        A502 LDS   3          SET C + OF ON               88434700
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05D4 00 C4000650         LD   L N501      LO /0000                   88434710
05D6 0  481B             BSC   -OC+       SK IF MINUS, OF OFF, CARRY 88434720
                   *                      *OFF OR PLUS               88434730
05D7 0  7003             MOX   G502                                   88434740
05D8 00 44000F83         BSI  L FOOO      BSC SKPC-SHOULD NOT        88434750
05DA 0  30AB             OC    /30AB      ERR IO                      88434760
05DB 00 44000FOE    G502 BSI  L FOO5      CK LOCK ON ERROR           88434770
05D0 0  70F5             MOX   A502       LOOP                        88434780
                   ****************************************           88434790
05DE 0  2003        A504 LOS   3          SET C AND OF ON             88434800
05DF 0  C07E             LO    N502       LO /8000                   88434810
05E0 0  2809             STS   N507       SET /0003 IN N507           88434820
05E1 0  4815             BSC   O-E        SK IF OF UFF,MUNIS OR EVEN 88434830
05E2 0  7001             MDX   G504                                   88434840
05E3 0  7003             MOX   G505                                   88434850
05E4 00 44000F83    G504 BSI  L FOOO      BSC FAILED TO SKIP         88434860
05E6 00 30AC             OC    /30AC      ERR IO                      88434870
05E7 00 44000FB2    G505 BSI  L FOOE      CK LOCK CN ERRCR           88434880
05E9 0  70F4             MOX   A504       LOOP                        88434890
05EA 0  2000        N507 LOS   0          SET C + OF OFF              88434900
05EB 0  4801             BSC   O          SKIP IF CVERFLOW IS OFF    88434910
05EC 0  4801             BSC   O                                     88434920
05ED 0  7001             MOX   G506                                   88434930
05EE 0  7003             MOX   G507                                   88434940
05EF 00 44000F83    G506 BSI  L FOOO      BSC NOT CLEAR CVERFLW      88434950
05F1 0  30AD             OC    /30AO      ERR ID                      88434960
05F2 00 44000FDE    G507 BSI  L FOO5      CK LCCK ON ERROR           88434970
05F4 0  70E9             MOX   A504       LOOP                        88434980
                   ****************************************           88435000
05F5 0  2000        A508 LOS   0          SET C ANO CF OFF            88435010
05F6 0  C068             LO    N503       LD /0001                   88435020
05F7 0  482A             BSC   C+Z        SK IF CARRY CFF, PLUS       88435020
                   *                      * OR ZERO                  88435030
05F8 0  7001             MOX   G508                                   88435040
05F9 0  7003             MOX   H508                                   88435050
05FA 00 44000F83    G508 BSI  L FOOO      BSC FAILEO TO SKIP         88435060
05FC 0  30AE             OC    /30AE      ERR ID                      88435070
05FD 00 44000FDE    H508 BSI  L FOO5      CK LOCK ON ERROR           88435080
05FF 0  70F5             MOX   A508       LOOP                        88435090
                   ****************************************           88435100
0600 0  2003        A50A LDS   3          SET C AND OF ON             88435110
0601 0  C05A             LO    N500       LO /8001                   88435120
0602 00 4C0F0613         BSC  L G50A,+OCE BR CN NCT PLUS, OF ON,     88435130
                   *                      * CARRY ON OR NOT EVEN     88435140
0604 0  7001             MOX   H50A                                   88435150
0605 0  7007             MDX   J50A                                   88435160
0606 00 44000F83    H50A BSI  L FOOO      BSC FELL THRU              88435170
0608 0  30AF             OC    /30AF      ERR IO                      88435180
0609 00 44000FB2         BSI  L FOOE      CK LOCK ON ERROR           88435190
060B 0  70F4             MOX   A50A       LOOP                        88435200
060C 0  7006             MDX   G50A                                   88435210
0600 00 44000F83    J50A BSI  L FOOO      BSC SKPC-SHOULO BRNCH      88435220
060F 0  30B0             OC    /30B0      ERR IO                      88435230
0610 00 44000FB2         BSI  L FOOE      CK LOCK ON ERROR           88435240
0612 0  70ED             MOX   A50A       LOOP                        88435250
0613 0  F048        G50A EOR   N500       ZERO WITH /8001            88435260
0614 0  4820             BSC   Z          SK CN ZERO                 88435270
0615 0  7001             MOX   H50B                                   88435280
0616 0  7003             MOX   K50B                                   88435290
0617 00 44000F83    H50B BSI  L FOOO      ACC OISTPOYEO AFTER BSC    88435300
0619 0  3170             OC    /3170      ERR IO                      88435310
061A 00 44000FOE    K50B BSI  L FOO5      CK LOCK ON ERROR           88435320
061C 0  7000             MDX   A50C       EXIT TO NEXT RCUTINE       88435330
                   ****************************************           88435340
****************************************************************     88435350
CORE    OATA OR     *LA- OPER-                                        88435360
ADOR    INSTRUCTION *BEL ATICN FT OPERANOS + REMARKS   IO+SEQ= AT RIGHT 88435370
****************************************************************     88435380
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PROCESSOR-CONTROLLER FUNCTION TEST

```
061D 0  2003     A50C  LDS   3           SET C + OF ON              BB435390
061E 0  C041           LD    N504        LD /0004                   BB435400
061F 00 4C300623       BSC L G50C,-Z     BR NOT MINUS OR NOT ZERO   BB435410
0621 0  7002           MDX   H50C                                   BB435420
0622 0  7008           MDX   J50C                                   BB435430
0623 0  700A     G50C  MDX   K50C                                   BB435440
0624 00 44000F83 H50C  BSI L F000        BSC FELL THRU              BB435450
0626 0  30B1           DC    /30B1       ERR ID                     BB435460
0627 00 44000FDE       BSI L F005        CK LOCK ON ERROR           BB435470
0629 0  70F3           MDX   A50C        LOOP                       BB435480
062A 0  7006           MDX   A50E                                   BB435490
062B 00 44000F83 J50C  BSI L F000        BSC SKPD-SHOULD BRNC       BB435500
062D 0  30B2           DC    /30B2       ERR ID                     BB435510
062E 00 44000FDE K50C  BSI L F005        CK LOCK ON ERROR           BB435520
0630 0  70EC           MDX   A50C        LOOP                       BB435530
0631 0  2000     A50E  LDS   0           SET C AND OF OFF           BB435540
                 ***************************************            BB435550
0632 0  2003           LDS   3           SET C AND OF ON            BB435560
0633 0  C028           LD    N500        LD /8001                   BB435570
0634 00 4C3F0638       BSC L G50E,+EOCZ- BR ON NOT PLUS, NOT EVEN,  BB435580
                 *                       *OF, CARRY, NOT ZERO OR    BB435590
                 *                       *NOT MINUS                 BB435600
0636 0  700B           MDX   H50E                                   BB435610
0637 0  7007           MDX   J50E                                   BB435620
0638 00 44000F83 G50E  BSI L F000        BSC BRNCHEO-SHOULDNT       BB435630
063A 0  30B3           DC    /30B3       ERR ID                     BB435640
063B 00 44000FDE       BSI L F005        CK LOCK ON ERROR           BB435650
063D 0  70F3           MDX   A50E        LOOP                       BB435660
063E 0  7006           MDX   B500                                   BB435670
063F 00 44000F83 J50E  BSI L F000        BSC SKPD-SHOULDNT          BB435680
0641 0  30B4           DC    /30B4       ERR ID                     BB435690
0642 00 44000FDE H50E  BSI L F005        CK LOCK ON ERROR           BB435700
0644 0  70EC           MDX   A50E        LOOP                       BB435710
                 ***************************************            BB435720
0645 0  2003     B500  LDS   3           SET C AND OF ON            BB435730
0646 0  C018           LD    N503        LD /0001                   BB435740
0647 0  4808           BSC   +           SK ON PLUS                 BB435750
0648 0  700C           MDX   S501                                   BB435760
0649 0  2817           STS   N505        SET /0003 IN N505          BB435770
064A 0  C0.6           LD    N505        LD /0003                   BB435780
064B 0  F016           EOR   N506        ZERO WITH /0003            BB435790
064C 00 4C180658       BSC L S503,+-     BRANCH ON ZERO             BB435800
064E 00 44000F83       BSI L F000        BSC + CLEAREO OVFLW        BB435810
0650 0  30B5           DC    /30B5       ERR ID                     BB435820
0651 00 44000FDE       BSI L F005        CK LOCK ON ERROR           BB435830
0653 0  70F1           MDX   B500        LOOP                       BB435840
0654 0  700L           MDX   A540        EXIT TO NEXT ROUTINE       BB435850
0655 00 44000F83 S501  BSI L F000        BSC FAILEO TO SKP          BB435860
0657 0  30B6           DC    /30B6       ERR ID                     BB435870
0658 00 44000FDE S503  BSI L F005        CK LOCK ON ERROR           BB4358B0
065A 0  70EA           MDX   B500        LOOP                       BB435B90
065B 0  7007           MDX   A540        EXIT TO NEXT ROUTINE       BB435900
065C 0  8001     N500  DC    /B001                                  BB435910
065D 0  0000     N501  DC    /0000                                  BB435920
065E 0  8000     N502  DC    /B000                                  BB435930
065F 0  0001     N503  DC    /0001                                  BB435940
0660 0  0004     N504  DC    /0004                                  BB435950
0661 0  0000     N505  DC    /0000                                  BB435960
0662 0  0003     N506  DC    /0003                                  BB435970
                 *                                                  BB435980
                 *           TEST OF BSI OPERATION                  BB435990
                 *                                                  BB436000
                 ***************************************            BB436010
                 ********************************************       BB436020
CORE     DATA OR  *LA- OPER-                                        BB436030
ADDR     INSTRUCTION *BEL AT ION FT OPERANOS + REMARKS  ID+SEC= AT RIGHT BB436040
                 ********************************************       BB436050
0663 0  2003     A540  LOS   3           SET C AND OF ON            BB436060
```

PROCESSOR-CONTROLLER FUNCTION TEST

```
0664 00 C400070B       LO  L N540        LD /B001                   BB436070
0666 00 442F0678       BSI L G540,EOC+Z  BR CN NOT EVEN, CARRY, OF, BB436080
066B 0  7001           MDX   H540        * NCT PLUS OR NOT ZERO      BB436090
0669 0  7007           MDX   J540                                   BB436100
066A 00 44000FB3 H540  BSI L F000        BSI FELL THRU              BB436110
066C 0  30B7           DC    /30B7       ERR IO                     BB436120
066D 00 44000FB2       BSI L F00E        CK LOCK ON ERROR           BB436130
066F 0  70F3           MDX   A540        LOOP                       BB436140
0670 0  7016           MDX   A5 4        EXIT TO NEXT ROUTINE       BB436150
0671 00 44000F83 J540  BSI L F000        BSI SKPD-SHOULD BRNCH      BB436160
0673 0  30BB           DC    /30BB       ERR ID                     BB436170
0674 00 44000FB2       BSI L F00E        CK LOCK ON ERROR           BB436180
0675 0  70EC           MDX   A540        LOOP                       BB436190
0677 0  7001           MDX   G540+1      SK TO WORD AFTER G540      BB436200
0678 0  0000     G540  DC    /0000                                  BB436210
0679 00 2C00070C       STS L N541        STORE /0002 IN N541        BB436220
067B 00 C400070C       LD  L N541        LD /0002                   BB436230
067D 00 F400070D       EOR L N542        ZERO WITH /0002            BB436240
067F 00 4C180684       BSC L G542,+-     BRANCH CN ZERO             BB436250
0681 00 44000F83       BSI L F000        BSI NOT CLEAR OVERFLOW     BB436260
0683 0  30B9           DC    /30B9       ERR ID                     BB436270
0684 00 44000FDE G542  BSI L F005        CK LOCK ON ERROR           BB436280
0686 0  70DC           MDX   A540        LOOP                       BB436290
                 ***************************************            BB436300
0687 00 C400070D A544  LD  L N542        LD /0002                   BB436310
0689 00 44300698       BSI L G544,7-     SK CN NOT ZERO OR          BB436320
068B 0  7001           MDX   H544        * NCT MINUS                BB436330
068C 0  7007           MDX   J544                                   BB436340
068D 00 44000F83 H544  BSI L F000        BSI DID NOT BRANCH         BB436350
068F 0  308A           DC    /30BA       ERR ID                     BB436360
0690 00 44000FDE       BSI L F005        CK LOCK ON ERRCR           BB436370
0692 0  70F4           MDX   A544        LOOP                       BB4363B0
0693 0  7008           MDX   A546        EXIT TO NEXT ROUTINE       BB436390
0694 00 44000F83 J544  BSI L F000        BSI SKPD-SHOULD BRNC       BB436400
0696 0  30BB           DC    /30BB       ERR ID                     BB436410
0697 00 44000FDE       BSI L F005        CK LOCK ON ERROR           BB436420
0699 0  70ED           MDX   A544        LOOP                       BB436430
069A 0  7001           MDX   A546        EXIT TO NEXT ROUTINE       BB436440
069B 0  0000     G544  DC    /0000                                  BB436450
                 ***************************************            BB436460
069C 0  C071     A546  LO    N543                                   BB436470
069D 00 442006A1       BSI L G546,Z      BR WHEN NOT ZERO           BB436480
069F 0  700C           MDX   J546                                   BB436490
06A0 0  7008           MDX   H546                                   BB436500
06A1 0  0000     G546  DC    /0000                                  BB436510
06A2 00 44000FB3       BSI L F000        BSI BRNCHD-SHOULD NO       BB436520
06A4 0  308C           DC    /30BC       ERR ID                     BB436530
06A5 00 44000FDE       BSI L F005        CK LOCK ON ERROR           BB436540
06A7 0  70F4           MDX   A546        LOOP                       BB436550
06AB 0  7006           MDX   A548        EXIT TO NEXT ROUTINE       BB436560
06A9 00 44000F83 H546  BSI L F000        BSI SKPD-SHOULD NOT        BB436570
06AB 0  30BD           DC    /30BD       ERR ID                     BB436580
06AC 00 44000FOE J546  BSI L F005        CK LOCK ON ERROR           BB436590
06AE 0  70ED           MDX   A546        LOOP                       BB436600
                 ***************************************            BB436610
                 ********************************************       BB436620
CURE     DATA OR  *LA- OPER-                                        BB436630
ADDR     INSTRUCTION *BEL ATION FT OPERANDS + REMARKS  ID+SEQ= AT RIGHT BB436640
                 ********************************************       BB436650
06AF 0  C05B     A54B  LD    N540                                   BB436660
06B0 00 441006BA       BSI L G548,-      BR WHEN NOT MINUS          BB436670
06B2 0  7008           MDX   H54B                                   BB4366B0
06B3 00 44000F83       BSI L F000        BSI SKP-ON COND TRUE       BB436690
06B5 0  30BF           DC    /30BF       ERR ID                     BB436700
06B6 00 44000FOE       BSI L F005        CK LOCK ON ERROR           BB436710
06BB 0  70F6           MDX   A54B        LOOP                       BB436720
06B9 0  7007           MDX   A54A        EXIT TO NEXT ROUTINE       BB436730
06BA 0  0000     G54B  DC    /0000                                  BB436740
```

PROCESSOR-CONTROLLER FUNCTION TEST

```
066B 00 44000F83      BSI L F000      BSI BRNCHO-SHOULD NOT    88436750
06B0 0  30BF          DC   /308F      ERR ID                   88436760
06BE 00 44000FOE H548 BSI L F005      CK LOCK ON ERROR         88436770
06C0 0  70EE          MDX  A548       LOOP                     88436780
                      ***********************************      88436790
06C1 D  C04B     A54A LO   N542       BR WHEN NOT PLUS         88436800
06C2 00 440B06CC      BSI L G54A,+    BR WHFN NOT PLUS         88436810
06C4 0  700B          MDX  H54A                                88436820
06C5 00 44000F83      BSI L F000      BSI SKPO ON COND TRUE    88436830
06C7 0  30C0          DC   /30C0      ERR ID                   88436840
06C8 00 44000FOE      BSI L F005      CK LOCK ON ERROR         88436850
06CA 0  70F6          MDX  A54A       LOOP                     88436860
06CB 0  7007          MDX  A54C       EXIT TO NEXT ROUTINE     88436870
06CC 0  0000     G54A DC   /0000                               88436880
06CD 00 44000F83      BSI L F000      BSI BRNCHO-SHOULD NOT    88436890
06CF 0  30C1          DC   /30C1      ERR IO                   88436900
06D0 00 44000FOE H54A BSI L F005      CK LOCK ON ERROR         88436910
06D2 0  70EE          MDX  A54A       LOOP                     88436920
                      ***********************************      88436930
06D3 0  C039     A54C LO   N542       BR WHEN NOT EVEN         88436940
06D4 00 44040600E     BSI L G54C,E                             88436950
06D6 0  700B          MDX  H54C                                88436960
06D7 00 44000F83      BSI L F000      BSI SKPD ON CONO TRUE    88436970
06D9 0  30C2          DC   /30C2      ERR IO                   88436980
06DA 00 44000FDE      BSI L F005      CK LOCK ON ERROR         88436990
06DC 0  70F6          MDX  A54C       LOOP                     88437000
06DD 0  7007          MDX  A54E       EXIT TO NEXT ROUTINE     88437010
06DE 0  0000     G54C DC   /0000                               88437020
06DF 00 44000F83      BSI L F000      BSI BRNCHO-SHOULO NOT    88437030
06E1 0  30C3          DC   /30C3      ERR ID                   88437040
06E2 00 44000FDE H54C BSI L F005      CK LOCK ON ERROR         88437050
06E4 0  70EE          MDX  A54C       LOOP                     88437060
                      ***********************************      88437070
06E5 0  2000     A54E LDS  0          SET C ANO OF OFF         88437080
06E6 00 440206F0      BSI L G54F,C    BR IF CARRY IS UN        88437090
06E8 0  700B          MDX  H54E                                88437100
06E9 00 44000F83      BSI L F000      BSI SKPO ON CONO TRUE    88437110
06EB 0  30C4          OC   /30C4      ERR IO                   88437120
06EC 00 44000FDE      BSI L F005      CK LOCK ON ERROR         88437130
06EE 0  70F6          MDX  A54E       LOOP                     88437140
06EF 0  7007          MDX  A54E       EXIT TO NEXT ROUTINE     88437150
06F0 0  0000     G54E OC   /0000                               88437160
06F1 00 44000F83      BSI L F000      BSI BRNCHO-SHOULO NOT    88437170
06F3 0  30C5          OC   /30C5      ERR ID                   88437180
06F4 00 44000FDE H54E BSI L F005      CK LOCK ON ERROR         88437190
06F6 0  70EE          MDX  A54E       LOOP                     88437200
                      ***********************************      88437210
06F7 0  2000     A54F LOS  0          SET C ANO OF OFF         88437220
06F8 00 4401C703      BSI L G54F,D    BR ON OVERFLOW           88437230
06FA 0  700C          MDX  H54F                                88437240
06FB 00 44000F83      BSI L F000      BSI SKPD ON CGNO TRUE    88437250
06FD 0  30C6          OC   /30C6      ERR IO                   88437260
06FE 0  30C6          OC   /30C6      ERR IO                   88437270
06FF 00 44000FDE      BSI L F005      CK LOCK ON ERROR         88437280
0701 0  70F5          MDX  A54F       LOOP                     88437290
0702 0  700C          MDX  A580       EXIT TO NEXT ROUTINE     88437300
0703 0  0000     G54F OC   /0000                               88437310
0704 00 44000F83      BSI L F000      BSI BRNCHO-SHOULO NOT    88437320
0706 0  30C7          DC   /30C7      ERR IO                   88437330
0707 00 44000FOE H54F BSI L F005      CK LOCK ON ERROR         88437340
0709 0  70ED          MDX  A54F       LOOP                     88437350
070A 0  7004          MDX  A580       EXIT TO NEXT ROUTINE     88437360
070B 0  8001     N540 OC   /8001                               88437370
070C 0  0000     N541 OC   /0000                               88437380
0700 0  0002     N542 OC   /0002                               88437390
070E 0  0000     N543 OC   /0000                               88437400
                      *                                        88437410
                      *          TEST OF LOO OPERATION         88437420
```

PROCESSOR-CONTROLLER FUNCTION TEST

```
                      *                                                 88437430
                      ***********************************************   88437440
        ***********************************************                 88437450
CORE   DATA OR  *LA- OPER-                                               88437460
AODR    INSTRUCTION *BEL ATION FT OPERANOS + REMARKS   IO+SEQ= AT RIGHT 88437470
        ***********************************************                 88437480
070F 0  C838     A580 LOO  N581      LOO A=/0000  Q=/0000    88437490
0710 00 4C180715      BSC L G580,+-  BRANCH ON ZERO          88437500
C712 00 44000F83      BSI L F000     I00-A REG INCORRECT     88437510
0714 0  30C8          OC   /30C8     ERR ID                  88437520
0715 00 44000F82 G580 BSI L F00E     CK LOCK ON ERROR        88437530
0717 0  70F7          MDX  A580      LOOP                    88437540
0718 D  1800          RTE  16                                88437550
0719 00 4C18071E      BSC L G582,+-  BRANCH ON ZERD          88437560
071B 00 44000F83      BSI L F000     LDO-Q REG INCORRECT     88437570
071D 0  30C9          DC   /30C9     ERR IO                  88437580
071E 00 44000FOE G582 BSI L F005     CK LOCK ON ERROR        88437590
0720 0  70EE          MDX  A580      LOOP                    88437600
                      ***********************************    88437610
0721 0  C828     A584 LOO  I583      LO A=/FFFF  Q=/FFFF     88437620
0722 0  F028          EOR  N584      ZERC WITH /FFFF         88437630
0723 00 4C180728      BSC L G584,+-  BRANCH CN ZERD          88437640
0725 00 44000F83      BSI L F000     LOO-A REG INCORRECT     88437650
0727 0  30CA          OC   /30CA     ERR ID                  88437660
0728 00 44000FB2 G584 BSI L F00E     CK LOCK ON ERROR        88437670
072A 0  70F6          MDX  A584      LOOP                    88437680
072B 0  1800          RTE  16        NOW A=/FFFF  C=/0000    88437690
072C 0  F01E          EOR  N584      ZERC WITH /FFFF         88437700
072D 00 4C180732      BSC L G586,+-  BRANCH ON ZERO          88437710
072F 00 44000F83      BSI L F000     LDO-Q REG INCORRFCT     88437720
0731 0  30C8          OC   /30C8     ERR ID                  88437730
0732 00 44000FOE G586 BSI L F005     CK LOCK ON ERROR        88437740
0734 0  70EC          MDX  A584      LOOP                    88437750
                      ***********************************    88437760
0735 0  C813     A588 LDO  N582      LD A=/0000 Q=/FFFF      88437770
0736 00 4C180738      BSC L G588,+-  BRANCH ON ZERO          88437780
0738 00 44000F83      BSI L F000     LOO ODO-A REG FAILEO    88437790
073A 0  30CC          OC   /30CC     ERR IO                  88437800
073B 00 44000FB2 G588 BSI L F00E     CK LOCK ON ERROR        88437810
073D 0  70F7          MDX  A588      LOOP                    88437820
073E 0  18D0          RTE  16        NOW A=/FFFF  Q=/0000    88437830
073F 00 4C180744      BSC L G58A,+-  BRANCH CN ZERO          88437840
0741 00 44000F83      BSI L F000     LOO-ODO-Q REG FAILEO    88437850
0743 0  30C0          OC   /30C0     ERR IO                  88437860
0744 00 44000FOE G58A BSI L F005     CK LOCK ON ERROR        88437870
0746 0  70EE          MDX  A588      LOOP                    88437880
0747 0  7004          MDX  A5C0      EXIT TC NEXT ROUTINE    88437890
0748    0000          BSS  E                                 88437900
0748 0  0000     N581 OC   /0000                             88437910
0749 0  0000     N582 DC   /0000                             88437920
074A 0  FFFF     N583 OC   /FFFF                             88437930
074B 0  FFFF     N584 OC   /FFFF                             88437940
                      *                                      88437950
                      *          TEST OF STO OPERATION       88437960
                      *                                      88437970
        ***********************************************      88437980
        ***********************************************      88437990
CORE   DATA OR  *LA- OPER-                                   88438000
ADOR    INSTRUCTION *BEL ATION FT OPERANDS + REMARKS   IO+SEQ= AT RIGHT  88438010
        ***********************************************      88438020
074C 0  C84B     A5C0 LOO  N5C1      LO A=/0000 Q=/0000      88438030
074D 0  084E          STO  N5C5                              88438040
074E 0  C040          LO   N5C5      LO A=/0000 Q=/0000      88438050
074F 00 4C180754      BSC L G5C0,+-  BRANCH ON ZERC          88438060
0751 00 44000F83      BSI L F000     STO-EA INCORRECT        88438070
0753 0  30CF          OC   /30CF     ERR IO                  88438080
0754 00 44000FB2 G5C0 BSI L F00E     CK LOCK ON ERROR        88438090
0756 0  70F5          MDX  A5C0      LOOP                    88438100
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PROCESSOR-CONTROLLER FUNCTION TEST

```
0757 0  C045        LD   N5C6      LD  /FFFF              8B438110
0758 00 4C18075D     BSC  L G5C2,+- BRANCH ON ZERO        8B438120
075A 00 44000F83     BSI  L F000    STD-EA+1 INCORRECT    8B438130
075C 0  30CF         DC     /30CF   ERR ID               8B438140
075D 00 44000FDE G5C2 BSI  L F005   CK LOCK ON ERROR     8B438150
075F 0  70EC         MDX    A5C0    LOOP                 8B438160
*******************************************               8B438170
0760 0  C037     A5C4 LD   N5C1     LD  /0000             8B438180
0761 0  D03A         STD    N5C5    STORE  /0000          8B438190
0762 0  D03A         STD    N5C6    STORE  /0000          8B438200
0763 0  C836         LDD    N5C3    LD  A=/FFFF   Q=/FFFF 8B43821C
0764 0  0837         STD    N5C5    STORE /FFFF  AND /FFFF 8B438220
0765 0  C036         LD     N5C5    LD  /FFFF             8B438230
0766 0  F033         EOR    N5C3    ZERO WITH /FFFF       8B438240
0767 00 4C18076C     BSC  L G5C4,+- BRANCH ON ZERO        8B438250
0769 00 44000F83     BSI  L F000    STD-EA INCORRECT      8B438260
076B 0  3000         DC     /3000   ERR ID               8B438270
076C 00 44000FB2 G5C4 BSI  L F00E   CK LOCK ON ERROR     8B43828D
076E 0  70F1         MDX    A5C4    LOOP                 8B438290
076F 0  C02D         LD     N5C6    LD  /1111             8B438300
0770 0  F029         EOR    N5C3                          8B438310
0771 00 4C180776     BSC  L G5C6,+- BRANCH ON ZERO        8B438320
0773 00 44000F83     BSI  L F000    STD-EA+1 INCORRECT    8B438330
0775 0  3001         DC     /3001   ERR ID               8B438340
0776 00 44000FDE G5C6 BSI  L F005   CK LOCK ON ERROR     8B438350
0778 0  70E7         MDX    A5C4    LOOP                 8B438360
*******************************************               8B438370
0779 0  C020     A5C8 LD   N5C3     LD  /FFFF             8B438380
077A 0  D021         STD    N5C5    STORE /FFFF           8B438390
077B 0  D021         STD    N5C6                          8B438400
077C 0  D021         STD    N5C7                          8B438410
077D 0  C81A         LDD    N5C1    LD  A=/0000  Q=/0000  8B43842D
077E 0  D81E         STD    N5C6    STORE IN N5C6 + N5C7  8B438430
077F 0  C018         LD     N5C1    LD  /0000             8B438440
0780 0  C01C         LD     N5C6    LD  /C000             8B438450
0781 00 4C180786     BSC  L G5C8,+- BRANCH ON ZERO        8B438460
0783 00 44000F83     BSI  L F000    STD-DDD-EA INCORRECT  8B438470
0785 0  3002         DC     /3002   ERR ID               8B438480
0786 00 44000FB2 G5C8 BSI  L F00E   CK LOCK ON ERROR     8B438490
0788 0  70F0         MDX    A5C8    LOOP                 8B438500
0789 0  C014         LD     N5C7    LD  /FFFF             8B438510
078A 0  F00F         EOR    N5C3    ZERO WITH /FFFF       8B438520
078B 00 4C180790     BSC  L G5CA,+- BRANCH ON ZERO        8B438530
078D 00 44000F00     BSI  L F000    STD-DDD-EA+1 LOADED   8B438540
078F 0  3003         DC     /3003   ERR ID               8B438550
0790 00 44000FDE G5CA BSI  L F005   CK LOCK ON ERROR     8B438560
0792 0  70E6         MDX    A5CA    LOOP                 8B438570
0793 0  C006         LD     N5C3    LD  /FFFF             8B438580
0794 0  D008         STO    N5C6                          8B438590
0795 0  D00B         STC    N5C7                          8B438600
0796 0  7008         MDX    A600    EXIT TO NEXT ROUTINE  8B438610
0798    0000         BSS  E                               8B438620
0798 0  0000     N5C1 DC     /0000                        8B438630
0799 0  0000         DC     /0000                        8B438640
079A 0  FFFF     N5C3 DC     /FFFF                        8B438650
079B 0  FFFF         DC     /FFFF                        8B438660
079C 0  FFFF     N5C5 DC     /FFFF                        8B438670
079D 0  FFFF     N5C6 DC     /FFFF                        8B438680
079E 0  FFFF     N5C7 DC     /FFFF                        8B438690
*                                                          8B438700
*                   TEST OF LDX OPERATION                 8B438710
*                                                          8B438720
*******************************************               8B438730
********************************************               8B438740
CORE   DATA OR   *LA- OPER-                                8B438750
ADDR   INSTRUCTION *BEL ATION FT OPERANDS + REMARKS  ID+SEQ= AT RIGHT 8B438760
*******************************************               8B438770
079F 00 650007A2 A600 LDX  L1 G600  LD XR 1 WITH ADDR OF G600  8B438780
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07A1 0  7003         MDX    H600                          8B438790
07A2 00 44000F83 G600 BSI  L F000    TAG REG BIT 7 FAILED 8B438800
07A4 0  3004         DC     /3004   ERR ID               8B438810
07A5 00 44000FDE H60D BSI  L F005   CK LOCK ON ERROR     8B438820
07A7 0  70F7         MDX    A600    LOOP                 8B438830
*******************************************               8B438840
07A8 00 660007AB A602 LDX  L2 G602  LD XR 2 WITH ADDR OF G602  8B438850
07AA 0  7003         MDX    H602                          8B438860
07AB 00 44000F83 G602 BSI  L F000    TAG REG BIT 6 FAILED 8B438870
07AD 0  3005         DC     /3005   ERR ID               8B438880
07AE 00 44000FDE H602 BSI  L F005   CK LOCK ON ERROR     8B438890
07B0 0  70F7         MDX    A602    LOOP                 8B438900
*******************************************               8B438910
07B1 0  6100     A604 LDX  1 0       LD DISP=0 TO XR 1    8B438920
07B2 00 C500081C     LD   L1 N601    LD ADDR OF N601 + XR 1 8B438930
07B4 0  F067         EOR    N601    ZERO WITH ADDR OF N601 8B438940
07B5 00 4C18078A     BSC  L G604,+- BRANCH ON ZERO        8B438950
07B7 00 44000F83     BSI  L F000    IX 1 NOT LOADED       8B438960
07B9 0  3006         DC     /3006   ERR ID               8B438970
07BA 00 44000FDE G604 BSI  L F005   CK LOCK ON ERROR     8B438980
07BC 0  70F4         MDX    A604    LOOP                 8B438990
*******************************************               8B439000
07BD 0  6200     A606 LDX  2 0       LD DISP=0 TO XR 2    8B439010
07BE 0  C05F         LD     N603    LD  /FFFF             8B439020
07BF 00 C600081C     LD   L2 N601    LD ADDR OF N601 + XR 2 8B439030
07C1 0  F05A         EOR    N601    ZERO WITH ADDR OF N601 8B439040
07C2 00 4C1807C7     BSC  L G606,+- BRANCH ON ZERO        8B439050
07C4 00 44000F83     CSI  L F000    XR 2 NOT LOADED       8B439060
07C6 0  3007         DC     /3007   ERR ID               8B439070
07C7 00 44000FDE G606 BSI  L F005   CK LOCK ON ERROR     8B439080
07C9 0  70F3         MDX    A606    LOOP                 8B439090
*******************************************               8B439100
07CA 0  6300     A608 LDX  3 0       LD DISP=0 TO XR 3    8B439110
07CB 0  C052         LD     N603    LD  /FFFF             8B439120
07CC 00 C700081C     LD   L3 N601    LD ADDR OF N601 + XR 3 8B439130
07CE 0  F04D         EOR    N601    ZERO WITH ADDR OF N601 8B439140
07CF 00 4C1807D4     BSC  L G608,+- BRANCH ON ZERO        8B439150
07D1 00 44000F83     BSI  L F000    XR 3 NOT LOADED       8B439160
07D3 0  3008         DC     /3008   ERR ID               8B439170
07D4 00 44000FDE G608 BSI  L F005   CK LOCK ON ERROR     8B439180
07D6 0  70F3         MDX    A608    LOOP                 8B439190
*******************************************               8B439200
07D7 0  61FF     A60A LDX  1 -1      LD XR 1 WITH -1      8B439210
07D8 0  C045         LD     N603    LD  /1111             8B439220
07D9 0  C500081C     LD   L1 N601    LD ADDR OF N601 + XR 1 8B439230
07DB 0  F03F         EOR    N600    ZERO WITH ADDR OF N600 8B439240
07DC 00 4C1807E1     BSC  L G60A,+- BRANCH ON ZERO        8B439250
07DE 00 44000F83     BSI  L F000    XR 1 NOT LOADED       8B439260
07E0 0  3009         DC     /3009   ERR ID               8B439270
07E1 00 44000FDE G60A BSI  L F005   CK LOCK ON ERROR     8B439280
07E3 0  70F3         MDX    A60A    LOOP                 8B439290
*******************************************               8B439300
07E4 0  62FF     A60C LDX  2 -1      LD XR 2 WITH -1      8B439310
07E5 0  C038         LD     N603    LD  /FFFF             8B439320
07E6 00 C600081C     LD   L2 N601    LD ADDR OF N601 + XR 2 8B439330
07E8 0  F032         EOR    N600    ZERO WITH ADDR OF N600 8B439340
07E9 00 4C1807EE     BSC  L G60C,+- BRANCH ON ZERO        8B439350
07EB 00 44000F83     BSI  L F000    XR 2 NOT LOADED       8B439360
07ED 0  300A         DC     /300A   ERR ID               8B439370
07EE 00 44000FDE G60C BSI  L F005   CK LOCK ON ERROR     8B439380
07F0 0  70F3         MDX    A60C    LOOP                 8B439390
*******************************************               8B439400
07F1 0  63FF     A60E LDX  3 -1      LD XR 3 WITH -1      8B439410
07F2 0  C02B         LD     N603    LD  /FFFF             8B439420
07F3 00 C700081C     LD   L3 N601    LD ADDR OF N601 + XR 3 8B439430
07F5 0  F025         EOR    N600    ZERO WITH ADDR OF N600 8B439440
07F6 00 4C1807F8     BSC  L G60E,+- BRANCH ON ZERO        8B439450
07F8 00 44000F83     BSI  L F000    XR 3 NOT LOADED       8B439460
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07FA 0  300b                OC      /30DB       ERR 10                              88439470
07FB 00 44000FDE    G60E    BSI  L  F005        CK LOCK ON ERROR                    88439480
07FD 0  70F3                MDX     A60E        LOOP                                88439490
                    ***************************************************            88439500
07FE 00 65000001    B600    LDX  L1 1           LD XR 3 WITH +1                     88439510
C800 0  C01D                LD      N603        LD /FFFF                            88439520
0801 00 C500081C            LD   L1 N601        LD ADDR OF N601 + XR 1              88439530
0803 0  F019                EOR     N602        ZERO WITH ADDR OF N602             88439540
0804 00 4C160809            BSC  L  J600,+-     BRANCH ON ZERO                      88439550
0806 00 44000F83            BSI  L  F000        LONG FORM LDX-FAILED                88439560
0808 0  300C                DC      /30DC       ERR 10                             88439570
0809 00 44000FOE    J600    BSI  L  F005        CK LOCK ON ERROR                    88439580
080B 0  70F2                MDX     B600        LOOP                                88439590
                    ***************************************************            88439600
080C 00 6780081E    B602    LDX  13 N603        LD XR 3 WITH /FFFF                  88439610
080E 0  C010                LD      N604        LD /0001                            88439620
080F 00 C700081C            LD   L3 N601        LD ADDR OF N601 + XR 3              88439630
0811 0  F009                EOR     N600        ZERO WITH ADDR OF N600             88439640
0812 00 4C180817            BSC  L  J602,+-     BRANCH ON ZERO                      88439650
0814 00 44000F83            BSI  L  F000        INDIRECT LDX FAILED                88439660
0816 0  30DD                DC      /30DD       ERR ID                             88439670
0817 00 44000FDE    J602    BSI  L  F005        CK LOCK ON ERROR                    88439680
0819 0  70F2                MDX     B602        LOOP                                88439690
081A 0  7005                MDX     A640        EXIT TO NEXT ROUTINE               88439700
081B 0  081B        N600    DC      N600                                           88439710
081C 0  081C        N601    DC      N601                                           88439720
081D 0  081D        N602    DC      N602                                           88439730
081E 0  FFFF        N603    DC      /FFFF                                           88439740
081F 0  0001        N604    DC      /0001                                           88439750
                    *                                                              88439760
                    *                                                              88439770
                    *                   TEST OF STX OPERATION                      88439780
                    *                                                              88439790
                    ***************************************************            88439800
CORE    DATA OR     *LA- OPER-                                                      88439810
ADDR    INSTRUCTION *BEL ATION FT OPERANDS + REMARKS   IO+SEQ= AT RIGHT             88439820
                    ***************************************************            88439830
0820 0  C060        A640    LD      N644        LD /FFFF                            88439840
0821 0  D069                STO     N640        SAVE                                88439850
0822 0  C0FF        h640    LD      H640        LO /COFF                            88439860
0823 0  6867                STX     N640        STORE INST REG AT N640             88439870
0924 0  F0F0        K640    EOR     H640        CK THAT ACC WAS NOT                88439880
                    *                           * RESET BY STX                     88439890
0825 00 4C180820            BSC  L  G640,+-     BRANCH ON ZERO                      88439900
0827 00 44000F83            BSI  L  F000        ACC GONE AFTER STX                 88439910
0829 0  3167                OC      /3167       ERR ID                             88439920
082A 00 4000FB2             BSI  L  F00E        CK LOCK ON ERROR                    88439930
082C 0  70F3                MDX     A640        LOOP                                88439940
082D 0  C05D        G640    LD      N640        CK THAT STX STORED CORECT          88439950
082E 0  F050                EOR     N642                                            88439960
082F 00 4C180834            BSC  L  G641,+-     BRANCH ON ZERO                      88439970
0831 00 44000F83            BSI  L  F000        I CTR NOT STORED                   88439980
0833 0  30DE                DC      /30DE       ERR 10                             88439990
0834 00 44000FDE    G641    BSI  L  F005        CK LOCK ON ERROR                    88440000
0836 0  70E9                MDX     A640        LOOP                                88440010
                    ***************************************************            88440020
0837 0  C056        A642    LD      N644        LO /FFFF                            88440030
0838 0  0052                STO     N640        SAVE                                88440040
0839 0  6100                LDX     1 0         LD XR 1 WITH /0000                 88440050
083A 0  6950                STX     1 N640      STORE C(XR 1) AT N640             88440060
083B 0  C04F                LO      N640        LD C(N640)                          88440070
083C 00 4C180841            BSC  L  G642,+-     BRANCH ON ZERO                      88440080
083E 00 44000F83            BSI  L  F000        XR 1 NOT STORED                    88440090
0840 0  300F                DC      /30DF       ERR 10                             88440100
0841 00 44000FDE    G642    BSI  L  F005        CK LOCK ON ERROR                    88440110
0843 0  70F3                MDX     A642        LOOP                                88440120
                    ***************************************************            88440130
0844 0  C049        A644    LO      N644        LO /FFFF                            88440140
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0845 0  0045                STO     N640        SAVE                                88440150
0846 0  6200                LDX     2 0         LD XR 2 WITH /0000                 88440160
0847 0  6A43                STY     2 N640      STORE C(XR 2) AT N640             88440170
0848 0  C042                LD      N640        LO C(N640)                          88440180
0849 00 4C18084E            BSC  L  G644,+-     BRANCH ON ZERO                      88440190
084B 00 44000F83            BSI  L  F000        XR 2 NOT STORED                    88440200
084D 0  30E0                DC      /30E0       ERR ID                             88440210
084E 00 44000FDE    G644    BSI  L  F005        CK LOCK ON ERROR                    88440220
0850 0  70F3                MDX     A644        LOOP                                88440230
                    ***************************************************            88440240
0851 0  C03C        A646    LO      N644        LO /FFFF                            88440250
0852 0  D03B                STO     N640        SAVE                                88440260
0853 0  6300                LDX     3 0         LD XR 3 WITH /0000                 88440270
0854 0  6B36                STX     3 N640      STORE C(XR 3) AT N640             88440280
0855 0  C035                LD      N640        LD C(N640)                          88440290
0856 00 4C18085B            BSC  L  C646,+-     BRANCH ON ZERO                      88440300
0858 00 44000F93            BSI  L  F000        XR 3 NOT STORED                    88440310
085A 0  30E1                DC      /30E1       ERR ID                             88440320
085B 00 44000FOE    G646    BSI  L  F005        CK LOCK ON ERROR                    88440330
085D 0  70F3                MDX     A646        LOOP                                88440340
                    ***************************************************            88440350
085E 0  C02E        A648    LD      N643        LO /0000                            88440360
085F 0  D02B                STO     N640        SAVE                                88440370
0860 0  61FF                LOX     1 -1        LD XR 1 WITH /FFFF                 88440380
0861 0  6929                STX     1 N640      STORE C(XR 1) AT N640             88440390
0862 0  C028                LD      N640        LD C(N640)                          88440400
0863 0  F02A                EOR     N644        ZERO WITH /FFFF                    88440410
0864 00 4C180869            BSC  L  G648,+-     BRANCH ON ZERO                      88440420
0866 00 44000F83            BSI  L  F000        XR 1 NOT STORED                    88440430
0868 0  30E2                DC      /30E2       ERR ID                             88440440
0869 00 44000FDE    G648    BSI  L  F005        CK LOCK ON ERROR                    88440450
086B 0  70F2                MDX     A648        LOOP                                88440460
                    ***************************************************            88440470
086C 0  C020        A64A    LD      N643        LO /0000                            88440480
086D 0  D01D                STO     N640        SAVE                                88440490
086E 0  62FF                LDX     2 -1        LD XR 2 WITH /FFFF                 88440500
086F 0  6A18                STX     2 N640      STORE C(XR 2) AT N640             88440510
0870 0  C01A                LD      N640        LD C(N640)                          88440520
0871 0  F01C                EOR     N644        ZERO WITH /FFFF                    88440530
0872 00 4C180877            BSC  L  G64A,+-     BRANCH ON ZERO                      88440540
0874 00 44000FB3            BSI  L  F000        XR 2 NOT STORED                    88440550
0876 0  30E3                DC      /30E3       ERR ID                             88440560
0877 00 44000FOE    G64A    BSI  L  F005        CK LOCK ON ERROR                    88440570
0879 0  70F2                MDX     A64A        LOOP                                88440580
                    ***************************************************            88440590
087A 0  C012        A64C    LD      N643        LO /0000                            88440600
087B 0  D00F                STO     N640        SAVE                                88440610
087C 0  63FF                LOX     3 -1        LD XR 3 WITH /FFFF                 88440620
087D 0  6B0D                STX     3 N640      STORE C(XR 3) AT N640             88440630
087E 0  C00C                LD      N640        LD C(N640)                          88440640
087F 0  F00E                EOR     N644        ZERO WITH /FFFF                    88440650
0880 00 4C180885            BSC  L  G64C,+-     BRANCH ON ZERO                      88440660
0882 00 44000FB3            BSI  L  F000        XR 3 NOT STORED                    88440670
0884 0  30E4                DC      /30E4       ERR 10                             88440680
0885 00 44000FDE    G64C    BSI  L  F005        CK LOCK ON ERROR                    88440690
0887 0  70F2                MDX     A64C        LOOP                                88440700
0888 0  C004                LD      N643        LD /0000                            88440710
0889 0  0001                STO     N640        RESTORE N640 TO /0000             88440720
088A 0  7004                MDX     A660        EXIT TO NEXT ROUTINE               88440730
088B 0  0000        N640    DC      /0000                                           88440740
088C 0  0824        N642    OC      K640                                           88440750
088D 0  0000        N643    DC      /0000                                           88440760
088E 0  FFFF        N644    DC      /FFFF                                           88440770
                    ***************************************************            88440780
                    ***************************************************            88440790
CORE    DATA OR     *LA- OPER-                                                      88440800
AODR    INSTRUCTION *BEL ATION FT OPERANDS + REMARKS   IO+SEQ= AT RIGHT             88440810
                    ***************************************************            88440820
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088F 0  6100      A660 LDX  1 0      LD XR 1 WITH /0000        8B440830
0890 U  6200           LDX  2 0      LD XR 2 WITH /0000        8B440840
0891 0  6300           LOX  3 0      LD XR 3 WITH /0000        8B440850
0892 0  61FF           LDX  1 -1     LD XR 1 WITH /FFFF        8B440860
0893 0  6A44           STX  2 N660   CK FOR OISTRUCTION OF     8B440870
0894 0  C043           LD   N660       OTHER INDEXES          8B440880
0895 0U 4C18089A       8SC L G660,+- BRANCH ON ZERO           8B440890
0897 00 44000F83       BSI L F000    XR 2 CHANGEO             8B440900
0899 0  3157           OC   /3157    ERR IO                   8B440910
089A 00 44000FB2  G660 BSI L F00E    CK LOCK ON ERROR         8B440920
089C 0  70F2           MOX  A660     LOOP                     8B440930
089D 0  6B3A           STX  3 N660   STORE C(XR 3) AT N660    8B440940
089E 0  C039           LD   N660     LO C(N660)               8B440950
089F 00 4C1808A4       BSC L G661,+- BRANCH ON ZERO           8B440960
08A1 00 44000F83       BSI L F000    XR 3 CHANGEO             8B440970
08A3 0  3158           OC   /3158    ERR ID                   8B440980
08A4 00 4400UFDE  G661 BSI L F0U5    CK LOCK ON ERRCR         8B440990
08A6 0  70E8           MOX  A660     LOOP                     8B441000
***********************************************************
08A7 0  6100      A662 LDX  1 0      LD XR 1 WITH /0000        8B441020
08A8 0  6200           LOX  2 0      LO XR 2 WITH /0000        8B441030
08A9 0  6300           LOX  3 0      LO XR 3 WITH /000C        8B441040
08AA 0  62FF           LDX  2 -1     LO XR 2 WITH /FFFF        8B441050
08AB 0  692C           STX  1 N660   STORE C(XR 1) AT N660    8B441060
08AC 0  C02B           LO   N660     LO C(N660)               8B441070
08AD 00 4C1808B2       BSC L G662,+- BRANCH ON ZERO           8B441080
08AF 0U 44000F83       BSI L F000    XR 1 CHANGED             8B441090
08B1 0  3159           DC   /3159    ERR ID                   8B441100
08B2 00 44000FB2  G662 BSI L F00E    CK LOCK ON ERROR         8B441110
08B4 0  70F2           MDX  A662     LOOP                     8B441120
08B5 0  6B22           STX  3 N660   STORE C(XR 3 AT N660     8B441130
08B6 0  C021           LO   N660     LD C(N660)               8B441140
08B7 00 4C1808BC       BSC L G663,+- BRANCH ON ZERO           8B441150
0889 00 44000F83       8SI L F000    CK LOCK ON ERROR         8B441160
08BB 00 315A           DC   /315A    ERR ID                   8B441170
08BC 00 44000FOE  G663 8SI L F005    CK LOCK ON ERROR         8B441180
08BE 0  70E8           MDX  A662     LOOP                     8B441190
***********************************************************
08BF 0  6100      A664 LOX  1 0      CK DISTRUCTION OF        8B441210
08C0 0  6200           LOX  2 0        OTHER INDEXES          8B441220
08C1 0  6300           LOX  3 0      XR'S HAVE /0000          8B441230
08C2 0  63FF           LOX  3 -1     LD XR 3 WITH /FFFF        8B441240
08C3 0  6914           STX  1 N660   STORE C(XR 1) AT N660    8B441250
08C4 0  C013           LD   N660     LO C(N660)               8B441260
08C5 00 4C1808CA       BSC L G664,+- BRANCH ON ZERO           8B441270
08C7 00 44000F83       BSI L F000    XR 1 CHANGEO             8B441280
08C9 0  315B           OC   /315B    ERR ID                   8B441290
08CA 00 44000FB2  G664 BSI L F00E    CK LOCK ON ERROR         8B441300
08CC 0  70F2           MOX  A664     LOOP                     8B441310
08CD 0  6A0A           STX  2 N660   STORE C(XR 2) AT N660    8B441320
08CE 0  C009           LD   N660     LO C(N660)               8B441330
08CF 00 4C1808D4       BSC L G665,+- BRANCH ON ZERO           8B441340
08D1 00 44000F83       BSI L F000    XR 2 CHANGED             8B441350
08D3 0  315C           OC   /315C    ERR ID                   8B441360
08D4 00 44000FOE  G665 BSI L F005    CK LOCK ON ERKOR         8B441370
08D6 0  70E8           MDX  A664     LOOP                     8B441380
08D7 0  7001           MOX  A670     EXIT TO NEXT ROUTINE     8B441390
08D8 0  0000      N660 OC   0                                 8B441400
***********************************************************
08D9 0  6110      A670 LDX  1 16     LD XR 1 WITH /0010        8B441420
08DA 0  C010           LD   N670     LOAD CNE                 8B441430
08DB 00 4C1808E4  G671 BSC L G670,+- NOT BR FOR CORRECT OP    8B441440
08DD 0  1001      G672 SLA  1                                 8B441450
08DE 0  71FF           MOX  1 -1     -1 FROM C(XR 1)          8B441460
08DF 0  70FB           MDX  G671                              8B441470
08E0 00 44000FDE       BSI L F005    CK LOCK ON ERROR         8B441480
08E2 0  70F6           MOX  A670     LOOP                     8B441490
08E3 0  7008           MOX  A680     EXIT TO NEXT ROUTINE     8B441500
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08E4 00 44000F83  G670 BSI L F000    WRONG DECODE OF ZERO ACC 8B441510
08E6 0  3169           OC   /3169    ERR ID                   8B441520
08E7 00 44000FB2       BSI L F00E    CK LOCK ON ERROR         8B441530
08E9 0  70EF           MOX  A670     LOOP                     8B441540
08EA 0  70F2           MOX  G672                              8B441550
08EB 0  0001      N670 DC   1                                 8B441560
*                                                             8B441570
*                          TEST CF ADD CPERATION             8B441580
*                                                             8B441590
***********************************************************   8B441600
CORE    OATA OR  *LA- OPER-                                   8B441610
AODR    INSTRUCTION *BEL ATION FT OPERANDS + REMARKS  IO+SEQ= AT RIGHT 8B441620
***********************************************************   8B441630
08EC 0  2002      A680 LOS  2        SET CARRY ON             8B441640
08ED G  C06E           LO   N680     LD /FFFF                 8B441650
08EE 0  806E           A    N681     A /0000                  8B441660
08EF 00 4C0108F2       BSC L G680,C  CK FOR OVERFLOW CN       8B441670
08F1 0  7003           MDX  H680     OVERFLOW IS OFF          8B441680
08F2 0  44000F83  G680 BSI L F0U0    OVERFLOW IS ON           8B441690
08F4 0  30E5           OC   /30E5    ERR IO                   8B441700
08F5 00 44000FB2  H680 BSI L F00E    CK LOCK CN ERROR         8B441720
08F7 0  70F4           MDX  A680     LOOP                     8B441730
08F8 0  F063           EOR  N680     CK IF ADD ZERO           8B441740
08F9 00 4C1808FE       BSC L G682,+- * CHANGED ACC            8B441750
08FB 00 44000F83       BSI L F000    AOO 1 ANO 0 FAILEO       8B441760
08FD 0  30E6           DC   /30E6    ERR ID                   8B441770
08FE 00 44000FOE  G682 BSI L F005    CK LOCK ON ERROR         8B441780
0900 0  70EB           MOX  A680     LOOP                     8B441790
***********************************************************
0901 0  2000      A684 LOS  0        SET C ANO OF OFF         8B441810
0902 0  C059           LD   N680     LD /FFFF                 8B441820
0903 0  805A           A    N682     A /0001                  8B441830
0904 00 4C020909       BSC L G684,C  CK IF CARRY OCCUREO      8B441840
0906 00 44000F83       BSI L F000    CARRY NCT ON             8B441850
0908 0  30E7           OC   /30E7    ERR 10                   8B441860
0909 00 44000FB2  G684 BSI L F00E    CK LOCK ON ERROR         8B441870
090B 0  70F5           MDX  A684     LOOP                     8B441880
090C 0U 4C180911       BSC L G686,+- BRANCH ON ZERO           8B441890
090E 0U 44000F83       8SI L F000    AOD FFFF+0001 FAILED     8B441900
0910 0  30E8           DC   /30E8    ERR ID                   8B441910
0911 00 44000FDE  G686 BSI L F005    CK LOCK ON ERROR         8B441920
0913 0  70E0           MDX  A684     LOOP                     8B441930
***********************************************************
0914 0  2000      A688 LDS  0        SET C ANO OF OFF         8B441940
0915 0  C046           LD   N680     LD /FFFF                 8B441950
0916 0  8045           A    N680     A /FFFF                  8B441960
0917 00 4C02091C       BSC L G688,C  BR ON CARRY             8B441970
0919 00 44000F83       BSI L F000    CARRY NOT ON             8B441980
091B 0  30E9           OC   /30E9    ERR ID                   8B441990
091C 00 44000FB2  G688 8SI L F00E    CK LOCK ON ERROR         8B442010
091E 0  70F5           MOX  A688     LOOP                     8B442020
091F 0  F042           EOR  N687     ZERC WITH /FFFF          8B442030
0920 00 4C180925       8SC L G68A,+- BRANCH ON ZERO           8B442040
0922 00 44000F83       BSI L F000    AOD FFFF+FFFF FAILED     8B442050
0924 0  30FA           OC   /30FA    ERR ID                   8B442060
0925 00 44000FDE  G68A BSI L F005    CK LOCK ON ERROR         8B442070
0927 0  70EC           MOX  A688     LOOP                     8B442080
***********************************************************
0928 0  2000      A68C LOS  0        SET C AND OF OFF         8B442100
0929 0  C035           LD   N683     LO /4000                 8B442110
092A 0  8034           A    N683     A /4000                  8B442120
092B 00 4C010930       BSC L G68C,C  BR IF CF NOT ON          8B442130
092D 00 44000F83       BSI L F000    OVERFLOW NOT ON          8B442140
092F 0  30EB           DC   /30EB    ERR IO                   8B442150
0930 00 44000FB2  G68C BSI L F00E    CK LOCK ON ERROR         8B442160
0932 0  70F5           MOX  A68C     LOOP                     8B442170
0933 0  F02C           EOR  N684     ZERO WITH /8000          8B442180
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0934 00 4C180939        BSC  L  G68E,+-   BRANCH ON ZERO            88442190
0936 00 44000F83        BSI  L  F000      ADD 4000+4000 FAILED      88442200
0938 0  30EC            DC      /30EC     ERR ID                    88442210
0939 00 44000FDE  G68E  BSI  L  F005      CK LOCK ON ERROR          88442220
093B 0  70EC            MDX     A6BC      LOOP                      88442230
***********************************************              88442240
093C 0  2000      B680  LDS     0         SET C AND OF OFF          88442250
093D 0  C022            LD      N684      LD /8000                  88442260
093E 0  8021            A       N684      A /8000                   88442270
093F 0  2B23            STS     N688      STORE C AND OF COND       88442280
0940 00 4C180945        BSC  L  J680,+-   BRANCH ON ZERO            88442290
0942 00 44000FB3        BSI  L  F000      ADD 8000+8000 FAILED      88442300
0944 0  30ED            DC      /30ED     ERR ID                    88442310
0945 00 44000FB2  J680  BSI  L  F00E      CK LOCK ON ERROR          88442320
0947 0  70F4            MDX     B680      LOOP                      88442330
0948 0  C01A            LD      N6B8      LD C AND OF COND          88442340
0949 0  F017            EOR     N686      ZERO WITH /0003           88442350
094A 00 4C180958        BSC  L  J6B2,+-   BRANCH ON ZERO            88442360
094C 00 4C040955        BSC  L  K6B2,E    BR ON NOT EVEN            88442370
094E 00 44000F83        BSI  L  F000      CARRY NOT ON              88442380
0950 0  30EF            DC      /30EF     ERR ID                    88442390
0951 00 44000FDE        BSI  L  F005      CK LOCK ON ERROR          88442400
0953 0  70E8            MDX     B680      LOOP                      88442410
0954 0  700F            MDX     A6C0      EXIT TO NEXT ROUTINE      88442420
0955 00 44000F83  K6B2  BSI  L  F000      OVERFLOW NOT ON           88442430
0957 0  30EE            DC      /30EE     ERR ID                    88442440
0958 00 44000FDE  J6B2  BSI  L  F005      CK LOCK ON ERROR          88442450
095A 0  70E1            MDX     B680      LOOP                      88442460
095B 0  7008            MDX     A6C0      EXIT TO NEXT ROUTINE      88442470
095C 0  FFFF      N680  DC      /FFFF                               88442480
095D 0  0000      N681  DC      /0000                               88442490
095E 0  0001      N682  DC      /0001                               88442500
095F 0  4000      N683  DC      /4000                               88442510
0960 0  8000      N684  DC      /8000                               88442520
0961 0  0003      N686  DC      /0003                               88442530
0962 0  FFFE      N687  DC      /FFFE                               88442540
0963 0  0000      N688  DC      /0000                               88442550
                  *                                                 88442560
                  *                  INDEXING TEST                  88442570
                  *                                                 88442580
**************************************************              88442590
CORE     DATA OR       *LA- OPER-                                   88442600
ADDR     INSTRUCTION *BEL ATION FT OPERANDS + REMARKS   ID+SEQ= AT RIGHT  88442620
**************************************************              88442630
0964 0  61FC      A6C0  LDX     1  -4       LD XR 1 WITH -4         88442640
0965 00 C5000920        LD      L1 N6C4    LD C(N6C4+XR 1)         88442650
0967 0  F074            EOR     N6C0       ZERO ACC IF CORRECT OP  88442660
0968 00 4C200976        BSC  L  H6C0,Z     BR IF NOT ZERO          88442670
096A 0  697A            STX     1  N6C9    STORE C(XR 1) AT N6C9   88442680
096B 0  C079            LD      N6C9       GET XR 1 VALUE          88442690
096C 0  F079            EOR     N6CA       ZERO ACC IF CORRECT     88442700
096D 00 4C180979        BSC  L  G6C0,+-    BRANCH ON ZERO          88442710
096F 00 44000F83        BSI  L  F000       XR 1 LOADED WRONG       88442720
0971 0  30F0            DC      /30F0      ERR ID                  88442730
0972 00 44000FDE        BSI  L  F005       CK LOCK ON ERROR        88442740
0974 0  70EF            MDX     A6C0       LOOP                    88442750
0975 0  7006            MDX     A6C2       EXIT TO NEXT ROUTINE    88442760
0976 00 44000F83  H6C0  BSI  L  F000       WRONG LOCATION          88442770
0978 0  30F1            DC      /30F1      ERR ID                  88442780
0979 00 44000FDE  G6C0  BSI  L  F005       CK LOCK ON ERROR        88442790
097B 0  70E8            MDX     A6C0       LOOP                    88442800
***********************************************              88442810
097C 0  6204      A6C2  LDX     2  4       LD XR 2 WITH +4         88442820
097D 00 C6000960        LD      L2 N6C4    LD C(N6C4+XR 2)         88442830
097F 0  F064            EOR     N6C8       ZERO ACC IF CORRECT     88442840
0980 00 4C20098E        BSC  L  H6C2,Z     BR IF NOT ZERO          88442850
0982 0  6A62            STX     2  N6C9    STORE XR 2 AT N6C9      88442860
```

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0983 0  C061            LD      N6C9       GET XR 2 VALUE          88442870
0984 0  F062            EOR     N6CB       ZERO ACC IF CORRECT     88442880
0985 00 4C180991        BSC  L  G6C2,+-    BRANCH ON ZERO          88442890
0987 00 44000F83        BSI  L  F000       XR 2 LOADED WRONG       88442900
0989 0  30F2            DC      /30F2      ERR ID                  88442910
098A 00 44000FDE        BSI  L  F005       CK LOCK ON ERROR        88442920
098C 0  70EF            MDX     A6C2       LOOP                    88442930
098D 0  7006            MDX     A6C4       EXIT TO NEXT ROUTINE    88442940
098E 00 44000F83  H6C2  BSI  L  F000       WRONG LOCATION          88442950
0990 0  30F3            DC      /30F3      ERR ID                  88442960
0991 00 44000FDE  G6C2  BSI  L  F005       CK LOCK ON ERROR        88442970
0993 0  70E8            MDX     A6C2       LOOP                    88442980
***********************************************              88442990
0994 0  6300      A6C4  LDX     3  0       SET XR 3 TO ZERO        8844300C
0995 00 C70009E0        LD      L3 N6C4    LD C(N6C4+XR 3)        88443010
0997 0  F048            EOR     N6C4       ZERO ACC IF CORRECT    88443020
0998 00 4C2009A5        BSC  L  H6C4,Z     BR IF NOT ZERO          88443030
099A 0  6B4A            STX     3  N6C9    STORE XR 3 AT N6C9     88443040
099B 0  C000            LD      N6C9       LD /0000               88443050
099C 00 4C1809AB        BSC  L  G6C4,+-    BRANCH ON ZERO          88443060
099E 00 44000F83        BSI  L  F000       XR 3 LOADED WRONG      88443070
09A0 0  30F4            DC      /30F4      ERR ID                  88443080
09A1 00 44000FDE        BSI  L  F005       CK LOCK ON ERROR        88443090
09A3 0  70F0            MDX     A6C4       LOOP                   88443100
09A4 0  7006            MDX     A6C6       EXIT TO NEXT ROUTINE   88443110
09A5 00 44000F83  H6C4  BSI  L  F000       WRONG LOCATION         88443120
09A7 0  30F5            DC      /30F5      ERR ID                 88443130
09A8 00 44000FDE  G6C4  BSI  L  F005       CK LOCK ON ERROR       88443140
09AA 0  70E9            MDX     A6C4       LOOP                   88443150
***********************************************              88443160
09AB 0  6301      A6C6  LDX     3  1       SET XR 3 TO +1         88443170
09AC 00 C70009E0        LD      L3 N6C4    LD C(N6C4+XR 3)       88443180
09AE 0  F032            EOR     N6C5       ZERO FOR CORRECT OP    88443190
09AF 00 4C20098D        BSC  L  H6C6,Z     BR IF NOT ZERO         88443200
09B1 0  6B33            STX     3  N6C9    STORE XR 3 AT N6C9     88443210
09B2 0  C032            LD      N6C9       LD C(N6C9)            88443220
09B3 0  F034            EOR     N6CD       ZERO ACC FOR CORRECT OP 88443230
09B4 00 4C1809C0        BSC  L  G6C6,+-    BRANCH ON ZERO        88443240
09B6 00 44000F83        BSI  L  F000       XR 3 LOADED WRONG     88443250
09B8 0  30F6            DC      /30F6      ERR ID                88443260
09B9 00 44000FDE        BSI  L  F005       CK LOCK ON ERROR      88443270
09BB 0  70EF            MDX     A6C6       LOOP                  88443280
09BC 0  7006            MDX     A6C8       EXIT TO NEXT ROUTINE  88443290
09BD 00 44000F83  H6C6  BSI  L  F000       WRONG LOCATION        88443300
09BF 0  30F7            DC      /30F7      ERR ID                88443310
09C0 00 44000FDE  G6C6  BSI  L  F005       CK LOCK ON ERROR      88443320
09C2 0  70E8            MDX     A6C6       LOOP                  88443330
***********************************************              88443340
09C3 0  63FF      A6C8  LDX     3  -1      SET XR 3 TO -1        88443350
09C4 00 C70009EA        LD      L3 N6C4    LD C(N6C4+XR 3)      88443360
09C6 0  F019            EOR     N6C4       ACC NOW ZERO         88443370
09C7 00 4C2009D5        BSC  L  H6C8,Z     BR IF NOT ZERO       88443380
09C9 0  6B1D            STX     3  N6C9    STORE XR 3 AT N6C9   88443390
09CA 0  C01A            LD      N6C9       LD C(N6C9)           88443400
09CB 0  F01E            EOR     N6CF       ZERO WITH /FFFE      88443410
09CC 00 4C1809D8        BSC  L  G6C8,+-    BRANCH ON ZERO       88443420
09CE 00 44000F83        BSI  L  F000       XR 3 LOADED WRONG    88443430
09D0 0  30F8            DC      /30F8      ERR ID               88443440
09D1 00 44000FDE        BSI  L  F005       CK LOCK ON ERROR     88443450
09D3 0  70EF            MDX     A6C8       LOOP                 88443460
09D4 0  7017            MDX     A6D0       EXIT TO NEXT ROUTINE 88443470
09D5 00 44000F83  H6C8  BSI  L  F000       WRONG LOCATION       88443480
09D7 0  30F9            DC      /30F9      ERR ID               88443490
09D8 00 44000FDE  G6C8  BSI  L  F005       CK LOCK ON ERROR     88443500
09DA 0  70E8            MDX     A6C8       LOOP                 88443510
09DB 0  7010            MDX     A6D0       EXIT TO NEXT ROUTINE 88443520
09DC 0  09DC      N6C0  DC      N6C0                            88443530
09DD 0  09DD      N6C1  DC      N6C4                            88443540
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PROCESSOR-CONTROLLER FUNCTION TEST

```
09DE 0  090E        N6C2  DC      N6C2                              88443550
09DF 0  090F        N6C3  DC      N6C3                              88443560
09E0 0  090D        N6C4  DC      N6C4                              88443570
09E1 0  09E1        N6C5  DC      N6C5                              88443580
09E2 0  09E2        N6C6  DC      N6C6                              88443590
09E3 0  09E3        N6C7  DC      N6C7                              88443600
09E4 0  09E4        N6C8  DC      N6C8                              88443610
09E5 0  0000        N6C9  DC      /0000                             88443620
09E6 0  FFFC        N6CA  DC      /FFFC                             88443630
09E7 0  0004        N6CB  DC      /0004                             88443640
09E8 0  0001        N6CD  DC      /0001                             88443650
09E9 0  09E0              DC      N6C4                              88443660
09EA 0  FFFF        N6CF  DC      /FFFF                             88443670
09EB 0  7007              MDX     A6C8        LOOP                  88443680
                    *****************************************      88443690
                    *****************************************      88443700
CORE     DATA OR    *LA- OPER-                                     88443710
ADDR     INSTRUCTION *BEL ATION FT OPERANDS + REMARKS  ID+SEQ= AT RIGHT 88443720
                    *****************************************      88443730
09EC 00 65000900    A6D0  LDX  L1 N6C1        LD XR 1 WITH ADDRESS 88443740
                    *                          * OF N6C1           88443750
09EE 0  C1FF              LD   1 -1           SHORT FORM INDEXING  88443760
09EF 0  F0EC              EOR    N6C0         ZERO IF CORRECT      88443770
09F0 00 4C1809F5          BSC  L H6D0,+-      BRANCH ON ZERO       88443780
09F2 00 44000F83          BSI  L F000         INDEXED LD INST. FAILED 88443790
09F4 0  3150              DC      /3150        ERR ID              88443800
09F5 00 44000FDE    H6D0  BSI  L F005         CK LOCK ON ERROR     88443810
09F7 0  70F4              MDX     A6D0         LOOP                88443820
                    *****************************************      88443830
09F8 00 66000900    A6D2  LDX  L2 N6C1        LD XR 2 WITH ADDRESS 88443840
                    *                          * OF N6C1           88443850
09FA 0  C201              LD   2 1            LD C(OF ADDRESS IN XR 1+1) 88443860
09FB 0  F0E2              EOR    N6C2         ZERO IF CORRECT      88443870
09FC 00 4C180A01          BSC  L H6D2,+-      BRANCH ON ZERO       88443880
09FE 00 44000F83          BSI  L F000         INDEXED LD INST. FAILED 88443890
0A00 0  315E              DC      /315E        ERR ID              88443900
0A01 00 44000FDE    H6D2  BSI  L F005         CK LOCK ON ERROR     88443910
0A03 0  70F4              MDX     A6D2         LOOP                88443920
                    *****************************************      88443930
0A04 00 670009DD    A6D3  LDX  L3 N6C1        LD XR 3 WITH ADD OF N6C1 88443940
0A06 0  C300              LD   3 0            LD C(OF ADD IN XR 3 + 0) 88443950
0A07 0  F005              EOR    N6C1         ZERO IF CORRECT      88443960
0A08 00 4C180A0D          BSC  L H6D3,+-      BRANCH ON ZERO       88443970
0A0A 00 44000F83          BSI  L F000         INDEXED LD INST. FAILED 88443980
0A0C 0  315F              DC      /315F        ERR ID              88443990
0A0C 00 44000FDE    H6D3  BSI  L F005         CK LOCK ON ERROR     88444000
0A0F 0  70F4              MDX     A6D3         LOOP                88444010
                    *****************************************      88444020
                    *****************************************      88444030
0A10 0  6102        A6D5  LDX  1 2            LD XR 1 WITH +2      88444040
0A11 0  C006              LD     N6C0         LD /0001             88444050
0A12 0  1101              SLA  1 1            NOW A=/0004          88444060
0A13 0  F0D3              EOR    N6C8         NOW A=/0000          88444070
0A14 00 4C180A19          BSC  L H6D5,+-      BRANCH ON ZERO       88444080
0A16 00 44000F83          BSI  L F000         INDEXED SLA FAILED   88444090
0A18 0  3163              DC      /3163        ERR ID              88444100
0A19 00 44000FDE    H6D5  BSI  L F005         CK LOCK ON ERROR     88444110
0A18 0  70F4              MDX     A6D5         LOOP                88444120
                    *****************************************      88444130
0A1C 0  6202        A6D6  LDX  2 2            LD /00004            88444140
0A1D 0  C0C9              LD     N6C8         NOW A=/0001          88444150
0A1E 0  1A01              SRA  2 1            ZERO ACC             88444160
0A1F 0  F0C8              EOR    N6CD         ZERO WITH /0001      88444170
0A20 00 4C180A25          BSC  L H6D6,+-      BRANCH ON ZERO       88444180
0A22 00 44000F83          BSI  L F000         INDEXED SRA FAILED   88444190
0A24 0  3164              DC      /3164        ERR ID              88444200
0A25 00 44000FDE    H6D6  BSI  L F005         CK LOCK ON ERROR     88444210
0A27 0  70F4              MDX     A6D6         LOOP                88444220
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PROCESSOR-CONTROLLER FUNCTION TEST

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                    *****************************************      88444230
                    *                                              88444240
                    *              TEST INDEXED BSC                88444250
                    *                                              88444260
                    *****************************************      88444270
CORE     DATA OR    *LA- OPER-                                     88444280
ADDR     INSTRUCTION *BEL ATION FT OPERANDS + REMARKS  ID+SEQ= AT RIGHT 88444300
                    *****************************************      88444300
0A28 0  6301        A6F0  LDX  3 1            LD XR 3 WITH +1      88444310
0A29 0  C00E              LD     N6F1         LD C(OF LABEL N6F1)  88444320
0A2A 00 4F000A2D          BSC  L3 N6F0        BR TO C(N6F0+XR 3)   88444330
0A2C 0  3000              WAIT                INDEXED BSC FAILED   88444340
0A2D 0  3000        N6F0  WAIT                INDEXED BSC FAILED   88444350
0A2E 0  F009              EOR    N6F1         CK FOR DISTROYED ACC 88444360
0A2F 00 4C180A34          BSC  L H6F0,+-      BRANCH ON ZERO       88444370
0A31 00 44000F83          BSI  L F000         ACC DISTROYED        88444380
0A33 0  3165              DC      /3165        ERR ID              88444390
0A34 00 44000FDE    H6F0  BSI  L F005         CK LOCK ON ERROR     88444400
0A36 0  70F1              MDX     A6F0         LOOP                88444410
0A37 0  7001              MDX     A6F1         EXIT TC NEXT ROUTINE 88444420
0A38 0  0A38        N6F1  DC      N6F1                             88444430
                    *****************************************      88444440
0A39 0  6201        A6F1  LDX  2 1            LD XR 2 WITH +1      88444450
0A3A 00 4E800A3D          BSC  I2 N6F2        BR TO N6F2+1 INDIRECT 88444460
0A3C 0  7005              MDX     H6F1         BSC FAILED          88444470
0A3D 0  7004        N6F2  MDX     H6F1         BSC FAILED          88444480
0A3E 0  0A41              DC      N6F3                             88444490
0A3F 0  7002              MDX     H6F1         BSC FAILED          88444500
0A40 0  7001              MDX     H6F1         BSC FAILED          88444510
0A41 0  7003        N6F3  MDX     H6F2                             88444520
0A42 00 44000F83    H6F1  BSI  L F000         BSC DID NOT BRANCH   88444530
0A44 0  3166              DC      /3166        ERR ID              88444540
0A45 00 44000FDE    H6F2  BSI  L F005         CK LOCK ON ERROR     88444550
0A47 0  70F1              MDX     A6F1         LOOP                88444560
                    *****************************************      88444570
                    *                                              88444580
                    *           TEST OF SUBTRACT OPERATION         88444590
                    *                                              88444600
                    *****************************************      88444610
0A48 0  2000        A700  LDS     0           SET C AND CF OFF     88444620
0A49 0  C066              LD     N700         LD /0000             88444630
0A4A 0  9066              S      N701         S /0001 A NOW /FFFF  88444640
0A4B 0  2866              STS    N702         STORE CARRY IND. TO N702 88444650
0A4C 0  F066              EOR    N703         ZERO ACC IF CORRECT  88444660
0A4D 00 4C180A52          BSC  L G700,+-      BRANCH ON ZERO       88444670
0A4F 00 44000F83          BSI  L F000         0000 MINUS 0001 FAILED 88444680
0A51 0  30FA              DC      /30FA        ERR ID              88444690
0A52 00 44000F82    G700  BSI  L F00F         CK LOCK ON ERROR     88444700
0A54 0  70F3              MDX     A700         LOOP                88444710
0A55 0  C05C              LD     N702         LD CARRY INDICATION  88444720
0A56 0  F05D              EOR    N704         ZERO IF CORRECT      88444730
0A57 00 4C180A5C          BSC  L G702,+-      BRANCH ON ZERO       88444740
0A59 00 44000F83          BSI  L F000         CARRY NOT ON         88444750
0A5B 0  30F8              DC      /30F8        ERR ID              88444760
0A5C 00 44000FDE    G702  BSI  L F005         CK LOCK ON ERROR     88444770
0A5E 0  70E9              MDX     A700         LOOP                88444780
                    *****************************************      88444790
0A5F 0  2000        A704  LDS     0           SET C AND CF OFF+    88444800
0A60 0  C04F              LD     N700         LD /0000             88444810
0A61 0  9051              S      N703         S /FFFF              88444820
0A62 0  284F              STS    N702         STORE CARRY ON CONDITION 88444830
0A63 0  F04F              EOR    N701         ZERO WITH /0001      88444840
0A64 00 4C180A69          BSC  L G704,+-      BRANCH ON ZERO       88444850
0A66 00 44000F83          BSI  L F000         0000 MINUS FFFF FAILED 88444860
0A68 0  30FC              DC      /30FC        ERR ID              88444870
0A69 00 44000F82    G704  BSI  L F00E         CK LOCK ON ERROR     88444880
0A68 0  70F3              MDX     A704         LOOP                88444890
0A6C 0  C045              LD     N702         LD CARRY COND FROM N702 88444900
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PROCESSOR-CONTROLLER FUNCTION TEST

```
0A6D 0 F046           EOR   N704      ZERO ACC IF CORRECT          BB444910
0A6E 00 4C180A73      BSC L G70C,+-   BRANCH ON ZERO               BB444920
0A70 00 44000F83      BSI L F000      CARRY NOT SET                BB444930
0A72 0 30FD           DC   /30FD      ERR ID                       BB444940
0A73 00 44000FDE G706 BSI L F005      CK LOCK ON ERROR             BB444950
0A75 0 70E9           MDX   A704      LOOP                          BB444960
      ************************************************             BB444970
      ************************************************             BB444980
CORE     DATA OR   *LA-OPER-                                        BB444990
ADDR     INSTRUCTION *BEL ATION FT OPERANDS + REMARKS  ID+SEQ= AT RIGHT BB445000
      ************************************************             BB445010
0A76 0 2000           A7C8 LDS   0    SET C AND OF OFF             BB445020
0A77 0 C03D           LD    N705      LD /8000                     BB445030
0A78 0 9028           S     N701      S /0001                      BB445040
0A79 0 2838           STS   N702      SAVE C + OF CONDITION        BB445050
0A7A 0 F03C           EOR   N707      ZERO ACC IF CORRECT OP       BB445060
0A7B 00 4C180A80      BSC L G708,+-   BRANCH ON ZERO               BB445070
0A7D 00 44000F83      BSI L F000      8000 MINU 0001 FAILED        BB445080
0A7F 0 30FE           DC   /30FE      ERR ID                       BB445090
0A80 00 44000FB2 G708 BSI L F00E      CK LOCK ON ERROR             BB445100
0A82 0 70F3           MDX   A708      LOOP                          BB445110
0A83 0 C02E           LD    N702      LD STORE CARRY CONDITION     BB445120
0A84 D F02C           EOR   N701      ZERO IF CORRECT              BB445130
0A85 00 4C180A8A      BSC L G70A,+-   BRANCH ON ZERO               BB445140
0A87 00 44000F83      BSI L F000      OVERFLOW NOT SET             BB445150
0A89 0 30FF           DC   /30FF      ERR ID                       BB445160
0A8A 00 44000FDE G70A BSI L F005      CK LOCK ON ERROR             BB445170
0A8C 0 70E9           MDX   A708      LOOP                          BB445180
      *************************************************            BB445190
0A8D 0 2000           A70C LDS   0    SET C AND OF OFF             BB445200
0A8E 0 C021           LD    N700      LD /0000                     BB445210
0A8F 0 9025           S     N705      S /8000                      BB445220
0A90 0 2022           STS   N702      STORE C + OF CONDITION       BB445230
0A91 0 2821           EOR   N705      ZERO ACC IF CORRECT          BB445240
0A92 00 4C180A97      BSC L G70C,+-   BRANCH ON ZERO               BB445250
0A94 00 44000F83      BSI L F000      0000 MINUS 8000 FAILED       BB445260
0A96 0 3100           DC   /3100      ERR ID                       BB445270
0A97 00 44000FB2 G70C BSI L F00E      CK LOCK ON ERROR             BB445280
0A99 0 70F3           MDX   A70C      LOOP                          BB445290
0A9A 0 C017           LD    N702      LD CON OF C+OF               BB445300
0A9B 0 F01A           EOR   N706      ZERO ACC IF CORRECT          BB445310
0A9C 00 4C180AAC      BSC L G70E,+-   BRANCH ON ZERO               BB445320
0A9E 0 C013           LD    N702      LD CON OF C + OF             BB445330
0A9F D E011           AND   N701      AND IN /0001                 BB445340
0AA0 00 4C200AA9      BSC L J70E,Z    BR IF NOT ZERO               BB445350
0AA2 00 44000F83      BSI L F000      OVERFLOW NOT ON              BB445360
0AA4 00 3101          DC   /3101      ERR ID                       BB445370
0AA5 00 44000FDE      BSI L F005      CK LOCK ON ERROR             BB445380
0AA7 0 70E5           MDX   A70C      LOOP                          BB445390
0AA8 0 70DF           MDX   A70C      EXIT TO NEXT ROUTINE         BB445400
0AA9 00 44000F83 J70E BSI L F000      CARRY NOT ON                 BB445410
0AAB 0 3102           DC   /3102      ERR ID                       BB445420
0AAC 00 44000FDE G70E BSI L F005      CK LOCK ON ERROR             BB445430
0AAE 0 70E8           MDX   A70C      LOOP                          BB445440
0AAF 0 7008           MDX   A740      EXIT TO NEXT ROUTINE         BB445450
0AB0 0 0000           N700 DC   /0000                              BB445460
0AB1 0 0001           N701 DC   /0001                              BB445470
0AB2 0 0000           N702 DC   /0000                              BB445480
0AB3 0 FFFF           N703 DC   /FFFF                              BB445490
0AB4 0 0002           N704 DC   /0002                              BB445500
0AB5 0 8000           N705 DC   /8000                              BB445510
0AB6 0 0003           N706 DC   /0003                              BB445520
0AB7 0 7FFF           N707 DC   /7FFF                              BB445530
      *                                                            BB445540
      *              TEST OF ADD DOUBLE                            BB445550
      *                                                            BB445560
      ************************************************             BB445570
      ************************************************             BB445580
```

PROCESSOR-CONTROLLER FUNCTION TEST

```
                                                                   BB445590
CORE     DATA OR   *LA- OPER-                                       BB445600
ADDR     INSTRUCTION *BEL ATION FT OPERANDS + REMARKS  ID+SEQ= AT RIGHT BB445610
      ************************************************             BB445620
0A68 0 2000           A740 LDS   0    SET C AND OF OFF             BB445630
0A69 00 CC000B80      LDD L N742      LD A=/FFFF  Q=/FFFF          BB445640
0A6B 00 8C000B82      AD  L N744      A  /0000  /0000              BB445650
0A6D 00 2C000B7E      STS L N740      STORE CON. OF C + OF         BB445660
0A6F 00 F4000B80      EOR L N742                                   BB445670
0A71 00 4C180AC6      BSC L G740,+-   BRANCH ON ZERO               BB445680
0A73 00 44000F83      BSI L F000      AD FFFF+0000 A FAILED        BB445690
0A75 0 3103           DC   /3103      ERR ID                       BB445700
0A76 00 44000FB2 G740 BSI L F00E      CK LOCK ON ERROR             BB445710
0A78 0 70EF           MDX   A740      LOOP                          BB445720
0A79 0 1800           RTE   16                                     BB445730
0A7A 00 F4000B80      EOR L N742                                   BB445740
0A7C 00 4C180AD1      BSC L G742,+-   BR ON ZERO                   BB445750
0A7E 00 44000F83      BSI L F000      AD FFFF+0000 Q FAILED        BB445760
0A80 0 3104           DC   /3104      ERR ID                       BB445770
0A81 00 44000FB2 G742 BSI L F00E      CK LOCK ON ERROR             BB445780
0A83 0 70E4           MDX   A740      LOOP                          BB445790
0A84 00 C4000B7E      LD  L N740      CONDITION OF C + OF          BB445800
0A86 00 4C180AE4      BSC L G744,+-   BRANCH ON ZERO               BB445810
0A88 00 4C040AE1      BSC L H744,E    BR IF NOT EVEN               BB445820
0A8A 00 44000F83      BSI L F000      CARRY NOT ON                 BB445830
0A8C 0 3105           DC   /3105      ERR ID                       BB445840
0A8D 00 44000FDE      BSI L F005      CK LOCK ON ERROR             BB445850
0A8F 0 70D8           MDX   A740      LOOP                          BB445860
0A90 0 7003           MDX   G744                                   BB445860
0A91 00 44000F83 H744 BSI L F000      OVFLO ON                     BB445870
0A93 0 3106           DC   /3106      ERR ID                       BB445880
0A94 00 44000FDE G744 BSI L F005      CK LOCK ON ERROR             BB445890
0A96 0 70D1           MDX   A740      LOOP                          BB445900
      *************************************************            BB445910
0A97 0 2000           A746 LDS   0    SET C AND OF OFF             BB445920
0A98 00 CC000B84      LDD L N746      LD A=/0000  Q=/0001          BB445930
0A9A 00 8C000B80      AD  L N742      A  /FFFF  /FFFF              BB445940
0A9C 00 2C000B7E      STS L N740      STORE COND OF C AND OF       BB445950
0A9E 00 4C180AF3      BSC L G746,+-   BRANCH ON ZERO               BB445960
0AA0 00 44000F83      BSI L F000      AD 0000+FFFF A FAILED        BB445970
0AA2 0 3107           DC   /3107      ERR ID                       BB445980
0AA3 00 44000FB2 G746 BSI L F00E      CK LOCK ON ERROR             BB445990
0AA5 0 70F1           MDX   A746      LOOP                          BB446000
0AA6 0 1800           RTE   16        INTERCHANGE A AND Q          BB446010
0AA7 00 4C180AFC      BSC L G748,+-   BRANCH ON ZERO               BB446020
0AA9 00 44000F83      BSI L F000      AD 0001+FFFF Q FAILED        BB446030
0AAB 0 3108           DC   /3108      ERR ID                       BB446040
0AAC 00 44000FB2 G748 BSI L F00E      CK LOCK ON ERROR             BB446050
0AAE 0 70E8           MDX   A746      LOOP                          BB446060
0AAF 00 C4000B7E      LD  L N740      LD COND OF C AND OF          BB446070
0B01 00 F4000B86      EOR L N748      CHECK FOR CARRY              BB446080
0B03 00 4C180B11      BSC L G74A,+-   ZERO= C AND OF OK            BB446090
0B05 00 4C040B0E      BSC L H74A,E    CHECK FOR OVERFLOW (815)     BB446100
0B07 00 44000F83      BSI L F000      CARRY NOT ON                 BB446110
0B09 0 3109           DC   /3109      ERR ID                       BB446120
0B0A 00 44000FDE      BSI L F005      CK LOCK ON ERROR             BB446130
0B0C 0 70DA           MDX   A746      LOOP                          BB446140
0B0D 0 7003           MDX   G74A                                   BB446150
0B0E 00 44000F83 H74A BSI L F000      OVFLO ON                     BB446160
0B10 0 310A           DC   /310A      ERR ID                       BB446170
0B11 00 44000FDE G74A BSI L F005      CK LOCK ON ERROR             BB446180
0B13 0 70D3           MDX   A746      LOOP                          BB446190
      *************************************************            BB446200
      *************************************************            BB446210
      *************************************************            BB446220
CORE     DATA OR   *LA- OPER-                                       BB446230
ADDR     INSTRUCTION *BEL ATION FT OPERANDS + REMARKS  ID+SEQ= AT RIGHT BB446240
      *************************************************            BB446250
0B14 0 2000           A74C LDS   0    SET C AND OF OFF             BB446250
0B15 0 CB6A           LDD   N742      LD A=/FFFF  Q=/FFFF          BB446260
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0B16 0 8865           AD    N742    A /FFFF    /FFFF              8B446270
0B17 0 2866           STS   N740    STORE C AND OF COND           8B446280
0B18 0 F067           EOR   N742    ZERO WITH /FFFF               8B446290
0B19 00 4C180B1E      BSC L G74C,+- BRANCH ON ZERO               8B446300
0B1B 00 44000F83      BSI L F000    AD FFFF+FFFF ACC FAILED       8B446310
0B1D 0 310B           DC    /310B   ERR ID                       8B446320
0B1E 00 44000FB2 G74C BSI L F00E    CK LOCK ON ERROR             8B446330
0B20 0 7JF3           MDX   A74C    LOOP                          8B446340
0B21 0 18D0           RTE   16      INTERCHANGE A AND Q          8B446350
0B22 0 F065           EOR   N74A    ZERO WITH /FFFF               8B446360
0B23 00 4C180B28      BSC L G74E,+- BRANCH ON ZERO               8B446370
0B25 00 44000F83      BSI L F000    AD FFFF+FFFF Q FAILED         8B446380
0B27 0 310C           DC    /310C   ERR ID                       8B446390
0B28 00 44000FB2 G74E BSI L F00E    CK LOCK ON ERROR             8B446400
0B2A 0 70E9           MDX   A74C    LOOP                          8B446410
0B2B 0 C052           LD    N740    CONDITION OF C AND OF        8B446420
0B2C 0 F059           EOR   N748    CHECK FOR OVERFLOW           8B446430
0B2D 00 4C180B3B      BSC L J74D,+- BRANCH ON ZERO               8B446440
0B2F 00 4C040B38      BSC L K74D,E  CHECK FOR CARRY              8B446450
0B31 00 44000F83      BSI L F000    CARRY NOT ON                 8B446460
0B33 0 310E           DC    /310E   ERR ID                       8B446470
0B34 00 44000FDE      BSI L F005    CK LOCK ON ERROR             8B446480
0B36 0 70DD           MDX   A74C    LOOP                          8B446490
0B37 0 7003           MDX   J740                                 8B446500
0B38 00 44000F83 K740 BSI L F000    OVFLO ON                     8B446510
0B3A 0 310D           DC    /310D   ERR ID                       8B446520
0B3B 00 44000FDE J740 BSI L F0D5    CK LOCK ON ERROR             8B446530
0B3D 0 70D6           MDX   A74C    LOOP                          8B446540
**********************************************                   8B446550
0B3E 0 2000 B742      LDS   0       SET C AND OF OFF             8B446560
0B3F 0 C84A           LDD   N74C    LD A=/FFFF  Q=/7FFF          8B446570
0B40 0 883F           AD    N742    A /FFFF    /FFFF              8B446580
0B41 0 283C           STS   N740    STORE CONDITION OF C + OF    8B446590
0B42 0 F03D           EOR   N742                                 8B446600
0B43 00 4C180B48      BSC L J742,+- BRANCH ON ZERO               8B446610
0B45 00 44000F83      BSI L F000    AD FFFF+FFFF A FAILED         8B446620
0B47 0 310F           DC    /310F   ERR ID                       8B446630
0B48 00 44000FB2 J742 BSI L F00E    CK LOCK ON ERROR             8B446640
0B4A 0 70F3           MDX   B742    LOOP                          8B446650
0B4B 0 18D0           RTE   16      INTERCHANGE A AND Q          8B446660
0B4C 0 F03C           EOR   N74B                                 8B446670
0B4D 00 4C180B52      BSC L J744,+- BRANCH ON ZERO               8B446680
0B4F 00 44000F83      BSI L F000    AD /7FFF+FFFF Q /FAILED      8B446690
0B51 0 3110           DC    /3110   ERR ID                       8B446700
0B52 00 44000FB2 J744 BSI L F00E    CK LOCK ON ERROR             8B446710
0B54 0 70E9           MDX   B742    LOOP                          8B446720
0B55 0 C028           LD    N740    LD C AND OF CONDITION        8B446730
0B56 0 F02B           EOR   N74B    ZERO IF CARRY WAS ON         8B446740
0B57 00 4C180B5D      BSC L J746,+- BRANCH ON ZERO               8B446750
0B59 00 4C040B62      BSC L K746,E  CHECK FOR CARRY              8B446760
0B5B 00 44000F83      BSI L F000    CARRY NOT ON                 8B446770
0B5D 0 3112           DC    /3112   ERR ID                       8B446780
0B5E 00 44000FDE      BSI L F005    CK LOCK ON ERROR             8B446790
0B60 0 70DD           MDX   B742    LOOP                          8B446800
0B61 0 7007           MDX   J746                                 8B446810
0B62 00 44000F83 K746 BSI L F000    OVFLO ON                     8B446820
0B64 0 3111           DC    /3111   ERR ID                       8B446830
0B65 00 44000FDE J746 BSI L F005    CK LOCK ON ERROR             8B446840
0B67 0 70D6           MDX   B742    LOOP                          8B446850
**********************************************                   8B446860
**********************************************                   8B446870
CORE   DATA OR  *LA- OPER-                                        8B446880
ADDR   INSTRUCTION *BEL ATION FT OPERANDS + REMARKS  IO+SEQ= AT RIGHT 8B446890
**********************************************                   8B446900
0B68 0 C81B B747      LDD   N746    LD A=/0000  Q=/0001          8B446910
0B69 0 A81B           AD    N747    A  /0001   /0001             8B446920
0B6A 0 F01A           EOR   N747    ZERO ACC IF CORRECT DP       8B446930
0B6B 00 4C180B70    . BSC L J748,+- BRANCH ON ZERO               8B446940
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0B6D 00 44000F83      BSI L F000    AD-ODD A REG FAILED          8B446950
0B6F 0 3113           DC    /3113   ERR ID                       8B446960
0B70 00 44000FB2 J748 BSI L F00E    CK LOCK ON ERROR             8B446970
0B72 0 70F5           MDX   B747    LOOP                          8B446980
0B73 0 18D0           RTE   16      NOW A=/0002  Q=/0000         8B446990
0B74 0 F011           EOR   N748    ZERO ACC IF CORRECT OP       8B447000
0B75 00 4C180B7A      BSC L J74A,+- BRANCH ON ZERO               8B447010
0B77 00 44000F83      BSI L F000    AD-ODD Q REG FAILED          8B447020
0B79 0 3114           DC    /3114   ERR ID                       8B447030
0B7A 00 44000FB2 J74A BSI L F005    CK LOCK ON ERROR             8B447040
0B7C 0 70EB           MDX   B747    LOOP                          8B447050
0B7D 0 700E           MDX   A780    EXIT TO NEXT ROUTINE         8B447060
0B7E C 0000 N740      DC    /0000                                8B447070
0B80   0000           BSS E                                      8B447080
0B80 0 FFFF N742      DC    /FFFF                                8B447090
0B81 0 FFFF           DC    /FFFF                                8B447100
0B82 0 0000 N744      DC    /0000                                8B447110
0B83 0 0000           DC    /0000                                8B447120
0B84 0 0000 N746      DC    /0000                                8B447130
0B85 0 0001 N747      DC    /0001                                8B447140
0B86 0 0002 N748      DC    /0002                                8B447150
0B87 0 0000           DC    /0000                                8B447160
0B88 0 FFFE N74A      DC    /FFFE                                8B447170
0B89 0 7FFE N74B      DC    /7FFE                                8B447180
0B8A 0 FFFF N74C      DC    /FFFF                                8B447190
0B8B 0 7FFF           DC    /7FFF                                8B447200
*                                                               8B447210
*                             TEST SUB DOUBLE                    8B447220
*                                                               8B447230
**********************************************                   8B447240
0B8C 0 2000 A780      LDS   0       SET C AND OF OFF             8B447250
0B8D 0 C868           LDD   N782    LD A=/0000  Q=/0000          8B447260
0B8E 0 9869           SD    N784    S  /0000   /0001             8B447270
0B8F 0 2864           STS   N780    STORE C AND OF CONDITION     8B447280
0B90 0 F069           EOR   N782    ZERO WITH /FFFF               8B447290
0B91 00 4C180B96      BSC L G780,+- BRANCH ON ZERO               8B447300
0B93 00 44000F83      BSI L F000    SD 0000-0000 ACC FAILED      8B447310
0B95 0 3115           DC    /3115   ERR ID                       8B447320
0B96 00 44000FB2 G780 BSI L F00E    CK LOCK ON ERROR             8B447330
0B98 0 70F3           MDX   A780    LOOP                          8B447340
0B99 0 18D0           RTE   16      NOW  A=/FFFF   Q=/0000       8B447350
0B9A 0 F05F           EOR   N786    ZERO WITH /FFFF               8B447360
0B9B 00 4C180BA0      BSC L G782,+- BR ON ZERO                   8B447370
0B9D 00 44000F83      BSI L F000    SD 0000-0001 Q FAILED        8B447380
0B9F 0 3116           DC    /3116   ERR ID                       8B447390
0BA0 00 44000FB2 G782 BSI L F00E    CK LOCK ON ERROR             8B447400
0BA2 0 70E9           MDX   A780    LOOP                          8B447410
0BA3 0 C050           LD    N780    LD C AND OF CONDITION        8B447420
0BA4 0 FD57           EOR   N788    ZERO IF CARRY WAS ON         8B447430
0BA5 00 4C180BB3      BSC L G784,+- BRANCH ON ZERO               8B447440
0BA7 00 4C040BB0      BSC L H784,E  CHECK FOR CARRY              8B447450
0BA9 00 44000F83      BSI L F000    CARRY NOT ON                 8B447460
0BAB 0 3117           DC    /3117   ERR ID                       8B447470
0BAC 00 44000FDE      BSI L F005    CK LOCK ON ERROR             8B447480
0BAE 0 70DD           MDX   A780    LOOP                          8B447490
0BAF 0 7003           MDX   G784                                 8B447500
0BB0 00 44000F83 H784 BSI L F000    OVFLO ON                     8B447510
0BB2 0 3118           DC    /3118   ERR ID                       8B447520
0BB3 00 44000FDE G784 BSI L F005    CK LOCK ON ERROR             8B447530
0BB5 0 70D6           MDX   A780    LOOP                          8B447540
**********************************************                   8B447550
**********************************************                   8B447560
CORE   DATA OR  *LA- OPER-                                        8B447570
ADDR   INSTRUCTION *BEL ATION FT OPERANDS + REMARKS  IO+SEQ= AT RIGHT 8B447580
**********************************************                   8B447590
0BB6 0 2000 A786      LDS   0       SET C AND OF OFF             8B447600
0BB7 0 CB3E           LDD   N782    LD A=/0000  Q=/0000          8B447610
0BB8 0 9841           SD    N786    /FFFF  /FFFF                 8B447620
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PROCESSOR-CONTROLLER FUNCTION TEST

```
08B9 00 4C180B8E        BSC L G786,+-    BRANCH ON ZERO              8B447630
088B 00 44000F83        BSI L F00D       SD 0000-FFFF A FAILED       8B447640
088D 0  3119            DC    /3119      ERR ID                      8B447650
08BE 00 44000F82  G786  BSI L F00E       CK LOCK ON ERROR            8B447660
08C0 0  70F5            MDX   A786        LOOP                        8B447670
08C1 0  18D0            RTE   16          NOW A=/0001  Q=/0000        8B4476BD
08C2 0  F036            EOR   N785        ZERO WITH /0001             8B447690
08C3 00 4C180BC8        BSC L G788,+-    BRANCH ON ZERO              8B447700
08C5 00 44000F83        BSI L F000       SO 0000-FFFF Q FAILED       8B447710
08C7 0  311A            DC    /311A      ERR ID                      8B447720
08C8 00 44000FDE  G788  BSI L F005       CK LOCK ON ERROR            8B447730
08CA 0  70EB            MDX   A786        LOOP                        8B447740
                        **********************************************   8B447750
08CB 0  C832     A78A   LDD   N78A        LD  A=/0000  Q=/C000       8B44776D
08CC 0  982D            SD    N786        S  /FFFF  /FFFF            8B447770
08CD 00 4C180BD2        BSC L G78A,+-    BRANCH ON ZERO              8B447780
08CF 00 44000F83        BSI L F000       SD 0000-FFFF A FAILED       8B447790
08D1 0  311B            DC    /311B      ERR ID                      8B447800
08D2 00 44000F82  G78A  BSI L F00E       CK LOCK ON ERROR            8B447810
08D4 0  70F6            MDX   A78A        LOOP                        8B447820
08D5 0  18D0            RTE   16          NOW A=/C001  Q=/0000       8B447830
08D6 0  F029            EOR   N78D        ZERO WITH /C001             8B447B40
08D7 00 4C180BDC        BSC L G78C,+-    BRANCH ON ZERO              8B447850
08D9 00 44000F83        BSI L F000       SD C000-FFFF Q FAILED       8B447860
08DB 0  311C            DC    /311C      ERR ID                      8B447870
08DC 00 44000FDE  G78C  BSI L F005       CK LOCK ON ERROR            8B447880
08DE 0  70EC            MDX   A78A        LOOP                        8B447890
                        **********************************************   8B447900
08DF 0  C816     A78E   LDD   N782        LD  A=/0000  Q=/0000       8B447910
08E0 0  981A            SO    N787        S  /FFFF  /FFFF            8B447920
08E1 00 4C180BE6        BSC L G78E,+-    BRANCH ON ZERO              8B447930
08E3 00 44000F83        BSI L F000       SO-ODD A FAILED             8B447940
08E5 0  311D            DC    /311D      ERR ID                      8B44795D
08E6 00 44000F82  G78E  BSI L F00E       CK LOCK ON ERROR            8B447960
08E8 0  70F6            MDX   A78E        LOOP                        8B447970
08E9 0  18D0            RTE   16          NOW A=/0001  Q=/0000       8B447980
08EA 0  F00E            EOR   N785        ZERO WITH /0001             8B447990
08EB 00 4C180BF0        BSC L H780,+-    BRANCH ON ZERO              8B448000
08ED 00 44000F03        BSI L F000       SO-ODD Q FAILED             8B448010
08EF 0  311E            DC    /311E      ERR ID                      8B448020
08F0 00 44000F0E  H780  BSI L F005       CK LOCK ON ERROR            8B448030
08F2 0  7DEC            MDX   A78E        LOOP                        8B44804D
08F3 0  700D            MDX   A7C0        EXIT TO NEXT ROUTINE        8B448050
08F4 0  0000     N780   DC    /000D                                  8B448060
08F6    0000            BSS E                                        8B448070
08F6 0  C000     N782   DC    /0000                                  8B448080
08F7 0  0000            OC    /0000                                  8B448090
08F8 0  0000     N784   DC    /0000                                  8B448100
08F9 0  0001     N785   OC    /0001                                  8B448110
08FA 0  FFFF     N786   OC    /FFFF                                  8B448120
08FB 0  FFFF     N787   OC    /FFFF                                  8B448130
08FC 0  0002     N788   DC    /0002                                  8B448140
08FD 0  0000            OC    /0000                                  8B448150
08FE 0  0000     N78A   DC    /0000                                  8B448160
08FF 0  C000            DC    /C000                                  8B448170
0C00 0  C001     N78D   OC    /C001                                  8B448180
                  *                                                  8B448190
                  *          TEST OF MULTIPLY OPERATION              8B448200
                  *                                                  8B448210
                        **********************************************   8B448220
**********************************************************************   8B448230
CORE     DATA OR   *LA- OPER-                                         8B448240
ADDR     INSTRUCTION *DEL ATION FT OPERANDS + REMARKS   ID+SEQ= AT RIGHT  8B448250
**********************************************************************   8B448260
0C01 0  C04F     A7C0  LD    N7C0        LD /5555                    8B448270
0C02 0  A04F            M     N7C1        M /2AAA                     8B448280
0C03 0  F04F            EOR   N7C2        ZERD WITH /0E3B             8B448290
0C04 00 4C180C09        BSC L G7C0,+-    BRANCH ON ZERO              8B448300
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0C06 00 44000F83        8SI L F000       M /5555X/2AAA ACC FAILED    8B448310
0C08 0  311F            OC    /311F       ERR IO                     8B448320
0C09 00 44000FB2  G7C0  8SI L F00E       CK LOCK ON ERROR            8B448330
0C0B 0  70F5            MOX   A7C0        LOOP                       8B448340
0C0C 0  1800            RTE   16          NOW A=/9C72 Q=/0000        8B448350
0C0D 0  F046            EOR   N7C3        ZERO WITH /9C72            8B448360
0C0E 00 4C180C13        BSC L G7C2,+-    BRANCH ON ZERO              8B448370
0C10 00 44000F83        BSI L F000       MULT 5555X2AAA G FAILED     8B448380
0C12 0  3120            DC    /3120       ERR IO                     8B448390
0C13 00 44000FDE  G7C2  BSI L F005       CK LOCK ON ERROR            8B448400
0C15 0  70EB            MOX   A7C0        LOOP                       8B448410
                        **********************************************   8B448420
0C16 0  C03E     A7C4   LO    M7C4        LD /FFFF                   8B448430
0C17 0  A03D            M     N7C4        M /FFFF                    8B448440
0C18 00 4C180C1D        BSC L G7C4,+-    BRANCH ON ZERO              8B448450
0C1A 00 44000F83        BSI L F000       M /FFFFX/FFFF ACC FAILED    8B448460
0C1C 0  3121            OC    /3121       ERR IO                     8B448470
0C1D 00 44000FB2  G7C4  8SI L F00E       CK LOCK ON ERROR            8B44848D
0C1F 0  70F6            MDX   A7C4        LOOP                       8B448490
0C20 0  1800            RTE   16          NOW A=/0001  C=/0000       8B448500
0C21 0  F034            EOR   N7C5        ZERO WITH /0001            8B448510
0C22 00 4C180C27        BSC L G7C6,+-    BRANCH ON ZERO              8B448520
0C24 00 44000F83        8SI L F000       M /FFFFX/FFFF Q REG FAILED  8B448530
0C26 0  3122            DC    /3122       ERR IO                     8B448540
0C27 00 44000FDE  G7C6  8SI L F005       CK LOCK ON ERROR            8B448550
0C29 0  70EC            MOX   A7C4        LOOP                       8B448560
                        **********************************************   8B448570
0C2A 0  C02C     A7C8   LD    N7C6        LD /0000                   8B448580
0C2B 0  A029            M     N7C4        M /FFFF                    8B448590
0C2C 00 4C180C31        BSC L G7C8,+-    BRANCH ON ZERO              8B448600
0C2E 00 44000F83        8SI L F000       M /FFFFX/0000 ACC FAILED    8B448610
0C30 0  3123            DC    /3123       ERR IO                     8B448620
0C31 00 44000FB2  G7C8  6SI L F00E       CK LOCK ON ERROR            8B448630
0C33 0  70F6            MOX   A7C8        LOOP                       8B448640
0C34 0  18D0            RTE   16          NOW A=/0000  C=/0000       8B448650
0C35 00 4C180C3A        BSC L G7CA,+-    BRANCH ON ZERO              8B448660
0C37 00 44000F83        8SI L F000       M /FFFFX/0000 Q REG FAILED  8B448670
0C39 0  3124            DC    /3124       ERR ID                     8B448680
0C3A 0  44000FDE  G7CA  BSI L F005       CK LOCK CN ERROR            8B448690
0C3C 0  70ED            MOX   A7C8        LOOP                       8B448700
                        **********************************************   8B448710
0C3D 0  C017     A7CC   LD    N7C4        LD /FFFF                   8B448720
0C3E 0  A018            M     N7C6        M /0000                    8B448730
0C3F 00 4C180C44        BSC L G7CC,+-    BRANCH ON ZERO              8B448740
0C41 00 44000F83        BSI L F000       M /0000X/FFFF ACC FAILED    8B448750
0C43 0  3125            OC    /3125       ERR IO                     8B448760
0C44 00 44000FB2  G7CC  BSI L F00E       CK LOCK ON ERROR            8B448770
0C46 0  70F6            MDX   A7CC        LOOP                       8B448780
0C47 0  1800            RTE   16          NOW A=/0000  Q=/0000       8B448790
0C48 00 4C180C40        BSC L G7CE,+-    BRANCH ON ZERO              8B448800
0C4A 00 44000F83        BSI L F000       M /0000X/FFFF Q REG FAILED  8B448810
0C4C 0  3126            DC    /3126       ERR IO                     8B448820
0C40 00 44000F0E  G7CE  BSI L F005       CK LOCK ON ERROR            8B448830
0C4F 0  70ED            MOX   A7CC        LOOP                       8B448840
0C50 0  7007            MDX   A800        EXIT TO NEXT ROUTINE       8B446850
0C51 0  5555     N7C0   OC    /5555                                  6B448860
0C52 0  2AAA     N7C1   OC    /2AAA                                  8B448870
0C53 0  0E38     N7C2   DC    /0E38                                  8B448880
0C54 0  9C72     N7C3   DC    /9C72                                  8B448890
0C55 0  FFFF     N7C4   OC    /FFFF                                  8B448900
0C56 0  0001     N7C5   OC    /0001                                  8B448910
0C57 0  0000     N7C6   DC    /0000                                  8B448920
                  *                                                  8B448940
                  *           TEST OF DIVIOE OPERATION               8B448950
                  *                                                  8B4489960
                        **********************************************   8B448960
**********************************************************************   8B448970
CORE     OATA OR   *LA- OPER-                                         8B448980
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PROCESSOR-CONTROLLER FUNCTION TEST

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ADDR    INSTRUCTION *REL ATION FT OPERANDS + REMARKS   ID+SEQ= AT RIGHT 8B448990
*********************************************************************** 8B449000
0C58 0  2000       A800 LDS    0            SET C AND OF OFF            8B449010
0C59 00 CC000CF6        LDD  L N802         LO A=/400C  Q=/7FFF         8B449020
0C5B 00  AC000D06        D   L N812         D /8000                     8B449030
0C5D 00 2C000CF5        STS  L N800         STORE C AND OF CONDITION    8B449040
0C5F 00 F4000D06        EOR  L N812         ZERO WITH /8000             8B449050
0C61 00 4C180C66        BSC  L G800,+-      BR ON ZERO                  8B449060
0C63 00 44000F83        BSI  L F000         DVD-A-REG INCORRECT         8B449070
0C65 0  3127            DC     /3127        ERR IO                      8B449080
0C66 00 44000FB2   G800 BSI  L FOOE         CK LOCK ON ERROR            8B449090
0C68 0  70EF            MDX    A800         LOOP                        8B449100
0C69 0  1800            RTE    16           NOW A=/7FFF  Q=/0000        8B449110
0C6A 00 F4000D05        EOR  L N811         ZERO WITH /7FFF             8B449120
0C6C 00 4C180C71        BSC  L G802,+-      BRANCH ON ZERO              8B449130
0C6E 00 44000F83        BSI  L F000         DVD-Q REG INCORRECT         8B449140
0C70 0  3128            DC     /3128        ERR IO                      8B449150
0C71 00 44000FB2   G802 BSI  L FOOE         CK LOCK ON ERROR            8B449160
0C73 0  70E4            MDX    A800         LOOP                        8B449170
0C74 00 C4000CF5        LD   L N800         LD /0000                    8B449180
0C76 00 4C180C84        BSC  L G804,+-      BRANCH ON ZERO              8B449190
0C78 00 4C040C81        BSC  L H804,E       BR ON NOT EVEN              8B449200
0C7A 00 44000F83        BSI  L F000         CARRY ON                    8B449210
0C7C 0  3129            DC     /3129        ERR ID                      8B449220
0C7D 00 44000FOE        BSI  L F005         CK LOCK ON ERROR            8B449230
0C7F 0  7008            MDX    A800         LOOP                        8B449240
0C80 0  7006            MDX    A806         EXIT TO NEXT ROUTINE        8B449250
0C81 00 4C010C83   H804 BSI  L F000         OVFLO ON                    8B449260
0C83 0  312A            DC     /312A        ERR ID                      8B449270
0C84 00 44000FOE   G804 BSI  L F005         CK LOCK ON ERROR            8B449280
0C86 0  70D1            MDX    A800         LOOP                        8B449290
********************************************************** 8B449300
0C87 0  C870       A806 LD     A=/1C71  Q=/BBE3                         8B449310
0C88 00 AC000D07        D   L N813          D /5555                     8B449320
0C8A 0  286A           STS    N800          STORE C AND OF CONDITION    8B449330
0C8B 00 F4000007        EOR  L N813         ZERO WITH /5555             8B449340
0C8D 00 4C180C92        BSC  L G806,+-      BRANCH ON ZERO              8B449350
0C8F 00 44000F83        BSI  L F000         DVD-A REG INCORRECT         8B449360
0C91 0  312B            DC     /312B        ERR IO                      8B449370
0C92 00 44000FB2   G806 BSI  L FOOE         CK LOCK ON ERROR            8B449380
0C94 0  70F2            MDX    A806         LOOP                        8B449390
0C95 0  1800            RTE    16           NOW A=/BBE3  Q=/0000        8B449400
0C96 00 F4000D08        EOR  L N816         ZERO WITH /2DAA             8B449410
0C98 00 4C180C9D        BSC  L G808,+-      BRANCH ON ZERO              8B449420
0C9A 00 44000FB3        BSI  L F000         DVD-Q REG INCORRECT         8B449430
0C9C 0  312C            DC     /312C        ERR ID                      8B449440
0C9D 00 44000FB2   G808 BSI  L FOOE         CK LOCK ON ERROR            8B449450
0C9F 0  70E7            MDX    A806         LOOP                        8B449460
0CA0 0  C054           LD     N800          LD C AND OF CONDITION       8B449470
0CA1 00 4C180CAF        BSC  L G80A,+-      BRANCH ON ZERO              8B449480
0CA3 00 4C040CAC        BSC  L H80A,E       BR IF NOT EVEN              8B449490
0CA5 00 44000F83        BSI  L F000         CARRY ON                    8B449500
0CA7 0  3120            DC     /3120        ERR ID                      8B449510
0CA8 00 44000FDE        BSI  L F005         CK LOCK ON ERROR            8B449520
0CAA 0  700C            MDX    A806         LOOP                        8B449530
0CAB 0  7006            MDX    A80C         EXIT TO NEXT ROUTINE        8B449540
0CAC 00 44000F83   H80A BSI  L F000         OVFLD ON                    8B449550
0CAE 0  312E            DC     /312E        ERR IO                      8B449560
0CAF 00 44000FOE   G80A BSI  L F005         CK LOCK ON ERROR            8B449570
0CB1 0  70D5            MDX    A806         LOOP                        8B449580
********************************************************** 8B449590
/***************************************************** ******************** 8B449600
CORE    DATA OR    *LA- OPER-                                          8B449610
ADDR    INSTRUCTION *BEL ATION FT OPERANDS + REMARKS   IO+SEQ= AT RIGHT 8B449620
*********************************************************************** 8B449630
0CB2 0  2000       A80C LOS    0            SET C AND OF OFF            8B449640
0CB3 0  CB46            LDO    N806         SET A=/0000  Q=/0001        8B449650
0CB4 0  A840            O      N80E         O /0000                     8B449660
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0CB5 00 4C010CBA        BSC  L G80C,D       BRANCH ON OVERFLOW         8B449670
0CB7 00 44000F83        BSI  L F000         DVD BY 0-OVRFLW CFF        8B449680
0CB9 0  312F            DC     /312F        ERR IO                     8B449690
0CBA 00 44000FDE   G80C BSI  L F005         CK LOCK ON ERROR           8B449700
0CBC 0  70F5            MDX    A80C         LOOP                       8B449710
**************************************************** 8B449720
0CBD 0  2000       A80E LDS    0            SET C AND OF OFF           8B449730
0CBE 0  C83D            LDO    N808         LO A=/4000  Q=/0000        8B449740
0CBF 0  A838            D      N807         D /0001                    8B449750
0CC0 00 4C010CC5        BSC  L G80E,D       BRANCH ON OVERFLOW         8B449760
0CC2 00 44000F83        BSI  L F000         DVD-BY 1-OVRFLW CFF        8B449770
0CC4 0  3130            DC     /3130        ERR IO                     8B449780
0CC5 00 44000FDE   G80E BSI  L F005         CK LOCK ON ERROR           8B449790
0CC7 0  70F5            MDX    A80E         LOOP                       8B449800
**************************************************** 8B449810
0CC8 0  2000       B800 LDS    0            SET C AND OF OFF           8B449820
0CC9 0  C834            LDO    N80A         LO A=/A000  Q=/0000        8B449830
0CCA 0  A831            D      N808         D /4000                    8B449840
0CC8 00 4C010CD0        BSC  L J800,D       BRANCH ON OVERFLOW         8B449850
0CCD 00 44000F83        BSI  L F000         DVD/4000-OVRFLW CFF        8B449860
0CCF 0  3131            DC     /3131        ERR IO                     8B449870
0CD0 00 44000FDE   J800 BSI  L F005         CK LOCK ON ERROR           8B449880
0CD2 0  70F5            MDX    B800         LOOP                       8B449890
**************************************************** 8B449900
0CD3 0  2000       B802 LDS    0            SET C AND OF OFF           8B449910
0CD4 0  C82B            LDO    N80C         LD A=/C000  O=/0000        8B449920
0CD5 0  A830            D      N812         D /8000                    8B449930
0CD6 00 4C010CDB        BSC  L J802,D       BR ON OF                   8B449940
0CD8 00 44000F83        BSI  L F000         DVD/8000-OVRFLW OFF        8B449950
0CDA 0  3132            DC     /3132        ERR ID                     8B449960
0CDB 00 44000FDE   J802 BSI  L F005         CHECK LOOP SWITCH          8B449970
0CDD 0  70F5            MDX    B802         LOOP                       8B449980
**************************************************** 8B449990
0CDE 0  2000       B804 LDS    0            SET C AND OF OFF           8B450000
0CDF 0  C822            LDO    N80E         LO A=/0000  Q=/FFFF        8B450010
0CE0 0  A81A            D      N807         D /0001                    8B450020
0CE1 00 4C010CE6        BSC  L J804,D       BR ON OF                   8B450030
0CE3 00 44000F83        BSI  L F000         DVD/0001-OVRFLW OFF        8B450040
0CE5 0  3133            DC     /3133        ERR IO                     8B450050
0CE6 00 44000FDE   J804 BSI  L F005         CK LOCK ON ERROR           8B450060
0CE8 0  70F5            MDX    B804         LOOP                       8B450070
**************************************************** 8B450080
0CE9 0  2000       B806 LDS    0            SET C AND OF OFF           8B450090
0CEA 0  C819            LDO    N810         LD A=/FFFF  Q=/7FFF        8B450100
0CEB 0  A80F            D      N807         D /0001                    8B450110
0CEC 00 4C010CF1        BSC  L J806,D       BR ON OF                   8B450120
0CEE 00 44000F83        BSI  L F000         DVD/0001-OVRFLW CFF        8B450130
0CF0 0  3134            DC     /3134        ERR IO                     8B450140
0CF1 00 44000FDE   J806 BSI  L F005         CK LOCK ON ERROR           8B450150
0CF3 0  70F5            MDX    B806         LOOP                       8B450160
0CF4 0  7023            MDX    B807         EXIT TO NEXT ROUTINE       8B450170
0CF5 0  0000       N800 DC     /0000                                   8B450180
0CF6    0000            BSS  E                                         8B450190
0CF6 0  4000       N802 DC     /4000                                   8B450200
0CF7 0  7FFF            DC     /7FFF                                   8B450210
0CF8 0  1C71       N804 DC     /1C71                                   8B450220
0CF9 0  BBE3            DC     /BBE3                                   8B450230
0CFA 0  0000       N806 DC     /0000                                   8B450240
0CFB 0  0001       N807 DC     /0001                                   8B450250
0CFC 0  4000       N808 DC     /4000                                   8B450260
0CFD 0  0000            DC     /0000                                   8B450270
0CFE 0  A000       N80A DC     /A000                                   8B450280
0CFF 0  0000            DC     /0000                                   8B450290
0D00 0  C000       N80C DC     /C000                                   8B450300
0D01 0  0000            DC     /0000                                   8B450310
0D02 0  0000       N80E DC     /0000                                   8B450320
0D03 0  FFFF       N80F DC     /FFFF                                   8B450330
0D04 0  FFFF       N810 DC     /FFFF                                   8B450340
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0005 0  7FFF      N811  DC    /7FFF                               BB450350
0006 0  8000      N812  DC    /8000                               BB450360
0007 0  5555      N813  DC    /5555                               BB450370
0008 0  2DAA      N816  DC    /2DAA                               BB450380
0009 0  C000      N817  DC    /C000                               BB450390
000A 0  6100      N81B  DC    /6100                               BB450400
000B 0  0000            DC    /0000                               BB450410
000C 0  8000      N819  DC    /8000                               BB450420
000D 0  0000            DC    /0000                               BB450430
000E 0  0002      N820  DC    /0002                               BB450440
000F 0  0000      N821  DC    0                                   BB450450
0010 0  2001            DC    /2001                               BB450460
0011 0  4000            DC    /4000                               BB450470
0012 0  C000            DC    /C000                               BB450480
0013 0  8000      N822  DC    /8000                               BB450490
0014 0  FFFF      N823  DC    /FFFF                               BB450500
0015 0  FFFF            DC    /FFFF                               BB450510
0016    0000            BSS   E  0                                BB450520
0016 0  0000      N824  DC    0                                   BB450530
0017 0  0000            DC    0                                   BB450540
                   ***********************************************  BB450550
****************************************************************   BB450560
CORE    DATA OR         *LA- OPER-                                BB450570
ADDR    INSTRUCTION *BEL ATION FT OPERANDS + REMARKS  ID+SEQ= AT RIGHT BB450580
****************************************************************   BB450590
0018 0  2000      BB07  LDS   0          SET C AND CF OFF         BB450600
0019 0  C8F0            LDD   N818       LD  A=/6100  Q=/0000     BB450610
001A 0  A8EE            D     N817       D  /C000                 BB450620
001B 00 4C010D20        BSC L J808,C     BR ON DF                 BB450630
001D 00 4400DF83        BSI L F000       OVERFLOW OFF             BB450640
001F 0  316A            DC    /316A      ERR ID                   BB450650
0020 00 44000FDE  J808  BSI L F005       CK LOCK ON ERROR         BB450660
0022 0  70F5            MDX   BB07        LOOP                     BB450670
                   ***********************************************  BB450680
0023 0  2000      BB08  LDS   0          SET C AND OF OFF         BB450690
0024 0  C8E7            LDD   N819       LD  A=/8000  Q=/0000     BB450700
0025 0  A8DD            D     N80F       D  /FFFF                 BB450710
0026 00 4C010D2B        BSC L J809,C     BR ON DF                 BB450720
0028 00 44000F83        BSI L F000       OVERFLOW OFF             BB450730
002A 0  316B            DC    /316B      ERR ID                   BB450740
002B 00 44000FDE  J809  BSI L F005       CK LOCK ON ERROR         BB450750
002D 0  70F5            MDX   BB08        LOOP                     BB450760
                   ***********************************************  BB450770
002E 0  2000      BB09  LDS   0          SET C AND OF OFF         BB450780
002F 0  C8E4            LDD   N823       LD  A=/FFFF  Q=/FFFF     BB450790
0030 0  A8DD            D     N820       D  /0002                 BB450800
0031 00 4C010D34        BSC L J815,C     BR ON OF                 BB450810
0033 0  7003            MDX   J810       OVERFLOW OFF             BB450820
0034 00 44000FB3  J815  BSI L F000                               BB450830
0036 0  316C            DC    /316C      ERR ID                   BB450840
0037 00 44000FDE  J810  BSI L F005       CK LOCK ON ERROR         BB450850
0039 0  70F4            MDX   BB09        LOOP                     BB450860
                   ***********************************************  BB450870
                   ***********************************************  BB450880
                   *                                              BB450890
                   *                                              BB450900
                   *            MULTIPLY-DIV TEST (BB10)          BB450910
                   *                                              BB450920
                   *                                              BB450930
                   *            THIS TEST TAKES 4 NUMBERS         BB450940
                   *            /8000, /C000, /4000 AND           BB450950
                   *            /2001 AND MULTIPLIES AND          BB450960
                   *            DIVIDES THE RESULT OF THE         BB450970
                   *            MULT.PLICATION BY ALL             BB450980
                   *            VALUES OF NEGATIVE AND            BB450990
                   *            POSITIVE NUMBERS.  THIS           BB451000
                   *            PROCEDURE IS REPETED              BB451010
                   *            UNTIL ALL FOUR NUMBERS            BB451020
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    *              HAVE BEEN USED.                            BB451030
    *                                                         BB451040
    *       STEP1 SET MULTIPLICAND AND                        BB451050
    *             DIVISOR TO LARGEST NEG.                     BB451060
    *             NUMBER.                                     BB451070
    *       STEP2 TAKE ONE OF FOUR NUMBERS                    BB451080
    *             AND USE IT AS THE                           BB451090
    *             MULTIPLIER                                  BB451100
    *       STEP3 MULTIPLY                                    BB451110
    *       STEP4 STORE RESULTS IN SYMBOLIC                   BB451120
    *             LOCATION N824                               BB451130
    *       STEP5 DIVIDE                                      BB451140
    *       STEP6 CHECK RESULT                                BB451150
    *       STEP7 INCREMENT MULTIPLICAND                      BB451160
    *             AND DIVISOR BY 1.                           BB451170
    *       STEP8 GO TO STEP 2 IF ALL                         BB451180
    *             VALUES HAVE NOT BEEN                        BB451190
    *             USED AS MULTIPLICANDS AND                   BB451200
    *             DIVISORS.                                   BB451210
    *       STEP9 SET UP FOR NEXT ONE OF 4                    BB451220
    *             MULTIPLIERS.                                BB451230
    *       STEP10 GO TO STEP 2 IF ALL 4                      BB451240
    *             NUMBERS HAVE NOT BEEN                       BB451250
    *             USED.                                       BB451260
    *                                                         BB451270
    *                                                         BB451280
    *                                                         BB451290
    * NOTE -- THREE WORD LOCATIONS ARE AVAILABLE FOR          BB451300
    *         MANUAL INSERTION OF ANY VALUE DESIRED.          BB451310
    *         THEY ARE AT LABEL ADDRESS N821+1, N821+2        BB451320
    *         AND N821+3.                                     BB451330
    *                                                         BB451340
    * CAUTION ** DO NOT CHANGE THE WORD AT LABEL              BB451350
    *             LOCATION N822 ( /8000).                     BB451360
    *                                                         BB451370
****************************************************************  BB451380
CORE    DATA OR         *LA- OPER-                                BB451390
ADDR    INSTRUCTION *BEL ATION FT OPERANDS + REMARKS  ID+SEQ= AT RIGHT BB451400
****************************************************************   BB451410
003A 0  6104      BB10  LDX   I 4        LD XR 1 WITH /0C04       BB451420
003B 00 0CD00FEC  J814  XIO L F003       CK BYPASS MPY/DIV SW     BB451430
003D 00 C400FFF0        LD  L 2000       LD SWITCH SETTINGS       BB451440
003F 0  1808            SRA   8          SHIFT BIT 7 TO BIT POS 15 BB451450
0040 0  4B04            BSC   E          SK IF BIT 15=0           BB451460
0041 0  702B            MDX   A840       SW BIT 6 ON (BYPASS)     BB451470
0042 0  C0D0            LD    N822       CONST /8000              BB451480
0043 0  D0CB            STO   N821       STORE /8000 AT N821      BB451490
0044 0  C0CA      J811  LD    N821       LD C(N821)  /8000        BB451500
0045 00 A5000D0F        M   L1 N821                               BB451510
0047 0  D8CE            STD   N824       STORE A AND Q            BB451520
0048 0  2000            LDS   0          SET C AND OF OFF         BB451530
0049 D  A8C5            D     N821       D  /8000                 BB451540
004A 00 F5000D0F        EOR L1 N821      ZERO WITH /8000          BB451550
004C 00 4C180D51        BSC L J812,+-    BRANCH ON ZERO           BB451560
004E 00 44000F83        BSI L F000       ACC NOT ZERO             BB451570
0050 0  316D            DC    /316D      ERR ID                   BB451580
0051 00 44000FB2  J812  BSI L F00E       CK LOCK ON ERROR         BB451590
0053 0  70F0            MDX   J811       LOOP ON MPL/DIV          BB451600
0054 0  1BD0            RTE   16         NOW  A=/0000  C=/0000    BB451610
0055 00 4C180D5A        BSC L J813,+-    BRANCH ON ZERO           BB451620
0057 00 44000FB3        BSI L F000       REMAINDER IN Q REG       BB451630
0059 0  316E            DC    /316E      ERR ID                   BB451640
005A 00 44000FB2  J813  BSI L F00E       CK LOCK ON ERROR         BB451650
005C 0  70E7            MDX   J811       LOOP ON MPL/DIV          BB451660
005D 0  C0B1      J816  LD    N821       LD /8000                 BB451670
005E 0  B09C            A     N807       ADD ONE                  BB451680
005F 0  D0AF            STO   N821                               BB451690
0060 00 4C1B0D5D        BSC L J816,+-    BRANCH ON ZERO           BB451700
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0062 0  F080        EOR    NB22                              8B451710
0063 00 4C200044    BSC L  J811,Z   BR IF NOT ZERO           8B451720
0065 0  71FF        MDX    1 -1                              8B451730
0066 0  70D4        MDX    JB14     LOOP TO CK SWITCHES       8B451740
0067 00 44000FDE    BSI I  F005     CK LOCK ON ERROR         8B451750
0069 0  70D0        MDX    B810     LOOP                      8B451760
*****************************************************         8B451770
*                                                            8B451780
*                   TEST OF MDX OPERATION                    8B451790
*                                                            8B451800
*****************************************************         8B451810
006A 0  6100    AB40 LDX   1 0      LD XR 1 WITH ZERO         8B451820
006B 0  71FF        MDX   1 -1      SK IF SIGN CHANGES        8B451830
006C 0  3000        WAIT            MDX FAILED TO SKIP        8B451840
006D 0  696E        STX   1 N840    STORE C(XR 1) AT N840     8B451850
006E 0  C06D        LD    N840      LD VALUE OF XR 1          8B451860
006F 0  F06D        EOR   N841      ZERO ACC WITH /FFFF       8B451870
0070 00 4C180075    BSC L  G840,+-  BRANCH ON ZERO            8B451880
0072 00 44000F83    BSI L  F000     MDX XR 1 FAILED           8B451890
0074 0  3135        DC    /3135     ERR ID                    8B451900
0075 00 44000FDE G840 BSI L F005    CK LOCK ON ERROR          8B451910
0077 0  70F2        MDX   A840      LOOP                      8B451920
*****************************************************         8B451930
0078 0  C069    AB42 LD    N845     LD WITH ADDR OF           8B451940
*                                   * LABEL N844              8B451950
0079 00 74010DDE    MDX L  NB42,1   BR TO LABEL ADDR N842 +1  8B451960
007B 0  F066        EOR   N845                                8B451970
007C 00 4C180081    BSC L  H842,+-  BRANCH ON ZERO            8B451980
007E 00 44000F83    BSI L  F000     ACC DISTROYED AFTER MDX   8B451990
0080 0  316F        DC    /316F     ERR ID                    8B452000
0081 0  C05C    H842 LD    N842     LD A=/3000                8B452010
0082 0  F060        EOR   N846      ACC NOW /0001             8B452020
0083 00 4C180088    BSC L  G842,+-  BRANCH ON ZERO            8B452030
0085 00 44000F83    BSI L  F000     ADD TO MEM FAILED         8B452040
0087 0  3136        DC    /3136     ERR ID                    8B452050
0088 0  C057    G842 LD    N843     LD /3000                  8B452060
0089 0  0054        STO   N842                                8B452070
008A 00 44000FDE    BSI L  F005     CK LOCK ON ERROR          8B452080
008C 0  70EB        MDX   A842      LOOP                      8B452090
*****************************************************         8B452100
*****************************************************         8B452110
CORE    DATA OR    *LA- OPER-                                 8B452120
ADDR    INSTRUCTION *BEL ATION FT OPERANDS + REMARKS  ID+SEQ= AT RIGHT  8B452130
*****************************************************         8B452140
008D 00 6600FFFE  AB44 LDX L2 -2    LD XR 2 WITH -2           8B452150
008F 00 76000001    MDX L2 1        ADD ONE TO XR 2           8B452160
0091 0  6A4A        STX   2 N84A    STORE XR 2                8B452170
0092 0  C049        LD    N840      LD WITH XR 2 VALUE        8B452180
0093 0  F049        EOR   N841      ZERO ACC WITH /FFFF       8B452190
0094 00 4C180099    BSC L  G844,+-  BRANCH ON ZERO            8B452200
0096 00 44000F83    BSI L  F000     MDX LONG XR 2 FAILED      8B452210
0098 0  3137        DC    /3137     ERR ID                    8B452220
0099 00 44000FDE  G844 BSI L F005   CK LOCK ON ERROR          8B452230
009B 0  70F1        MDX   A844      LOOP                      8B452240
*****************************************************         8B452250
009C 0  63FF    AB46 LDX   3 -1     LD XR 3 WITH -1           8B452260
009D 0  7301        MDX   3 1       ADD ONE TO XR 3           8B452270
009E 0  7001        MDX   G846      DID NOT SK ON MDX         8B452280
009F 0  7003        MDX   H846                                8B452290
00A0 00 44000F83  G846 BSI L F000   XR 3 NO SKIP AT 0         8B452300
00A2 0  3138        DC    /3138     ERR ID                    8B452310
00A3 00 44000FDE  H846 BSI L F005   CK LOCK ON ERROR          8B452320
00A5 0  70F6        MDX   A846      LOOP                      8B452330
*****************************************************         8B452340
00A6 0  61FF    AB48 LDX   1 -1     LD XR 1 WITH -1           8B452350
00A7 0  7104        MDX   1 4       ADD 4 TO XR 1             8B452360
00A8 0  7001        MDX   G84B      DID NOT SK ON MDX         8B452370
00A9 0  7003        MDX   H84B                                8B452380
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00AA 00 44000F83  G84B BSI L F000   SIGN CHANGE-NO SKIP       8B452390
00AC 0  3139        DC    /3139     ERR ID                    8B452400
00AD 00 44000FDE  H84B BSI L F005   CK LOCK ON ERROR          8B452410
00AF 0  70F6        MDX   A84B      LOOP                      8B452420
*****************************************************         8B452430
00B0 00 6500FFFE  A849 LDX L1 -2    LD XR 1 WITH -2           8B452440
00B2 0  C0FF    H849 LD    H849                               8B452450
00B3 00 75800DE2    MDX I1 N845                               8B452460
00B5 0  6926        STX   1 N840    STORE C(XR 1) AT N840     8B452470
00B6 0  F0F5        EOR   H849                                8B452480
00B7 00 4C180DBC    BSC L  K849,+-  BRANCH ON ZERO            8B452490
00B9 00 44000F83    BSI L  F000     ACC GONE AFTER MDX INDEXED 8B452500
00BB 0  316B        DC    /316B     ERR ID                    8B452510
00BC 0  C01F    K849 LD    N840     LD VALUE OF XR 1 AFTER     8B452520
*                                   * MDX OP                  8B452530
00BD 0  F01F        EOR   N841      ZERO ACC WITH /FFFF       8B452540
00BE 00 4C180DC3    BSC L  G849,+-  BRANCH ON ZERO            8B452550
00C0 00 44000F83    BSI L  F000     INDIRECT MDX FAILED       8B452560
00C2 0  313A        DC    /313A     ERR ID                    8B452570
00C3 00 44000FDE  G849 BSI L F005   CK LOCK ON ERROR          8B452580
00C5 0  70EA        MDX   A849      LOOP                      8B452590
*****************************************************         8B452600
00C6 00 7400CDDA  A84A MDX  I N84A,C TEST SKIP IF ZERO        8B452610
00C8 0  7001        MDX   G84A      BYPASS IF CORRECT OP      8B452620
00C9 0  7003        MDX   H84A                                8B452630
00CA 00 44000F83  G84A BSI L F000   MDX L  FAILED TO SKIP     8B452640
00CC 0  3171        DC    /3171     ERR ID                    8B452650
00CD 00 44000FDE  H84A BSI L F005   CK LOCK ON ERROR          8B452660
00CF 0  70F6        MDX   A84A      LOOP                      8B452670
*****************************************************         8B452680
00D0 00 7400CDDB  A85A MDX  I N85A,C TEST NON SKIP            8B452690
00D2 0  7003        MDX   H85A                                8B452700
00D3 00 44000F83    BSI L  F000     MDX L  SKIPED             8B452710
00D5 0  3172        DC    /3172     ERR ID                    8B452720
00D6 00 44000FDE  H85A BSI L F005   CK LOCK ON ERROR          8B452730
00D8 0  70F7        MDX   A85A      LOOP                      8B452740
00D9 0  700A        MDX   A680      EXIT TO NEXT ROUTINE      8B452750
00DA 0  0000    N84A DC    0        CONSTANT ZERO             8B452760
00DB 0  0001    N85A DC    1        NON ZERO CONSTANT         8B452770
*****************************************************         8B452780

*****************************************************         8B452790
CORE    DATA OR    *LA- OPER-                                 8B452800
ADDR    INSTRUCTION *BEL ATION FT OPERANDS + REMARKS  ID+SEQ= AT RIGHT  8B452810
*****************************************************         8B452820
00DC 0  0000    N840 DC   /0000                               8B452830
00DD 0  FFFF    N841 DC   /FFFF                               8B452840
00DE 0  3000    N842 WAIT           ADD TO MEM FAILED         8B452850
00DF 0  3000        WAIT            ADD TO MEM FAILED         8B452860
00E0 0  3000    N843 WAIT           ADD TO MEM FAILED         8B452870
00E1 0  0001    N844 DC   /0001                               8B452880
00E2 0  00E1    N845 DC   N844                                8B452890
00E3 0  3001    N846 DC   /3001                               8B452900
*                                                            8B452910
*                   TEST OF SLC OPERATION                    8B452920
*                                                            8B452930
*****************************************************         8B452940
00E4 0  610A    A880 LDX   1 10     LD XR 1 WITH +10          8B452950
00E5 00 CC000E0E    LDD L  N882     LD A=/0000 Q=/FFFF        8B452960
00E7 0  2002        LDS   2         SET C ON                  8B452970
00E8 0  1140        SLCA 1 0        NOW A=/0000 Q=/FFFF       8B452980
00E9 00 60000E0C    STX L1 N880     STORE C(XR 1)             8B452990
00EB 0  2812        STS   G881      STORE CARRY CONDITION     8B453000
00EC 00 4C180DF1    BSC L  G880,+-  BRANCH ON ZERO            8B453010
00EE 00 44000F83    BSI L  F000     ACC NOT=ZERO              8B453020
00F0 0  313B        DC    /313B     ERR ID                    8B453030
00F1 00 44000FB2  G880 BSI L F00E   CK LOCK ON ERROR          8B453040
00F3 0  70F0        MDX   A880      LOOP                      8B453050
00F4 00 C4000E0C    LD L   N880     LD PREVIOUS C(XR 1)       8B453060
```

PROCESSOR-CONTROLLER FUNCTION TEST

```
0DF6 00 4C180DF8          8SC  L  G882,+-    BRANCH ON ZERO              88453070
0DF8 00 44000F83          8SI  L  F000       XR 1 NOT=ZERO              88453080
0DFA 0  313C              DC      /313C      ERR ID                    88453090
0DFB 00 44000FB2   G882   BSI  L  F00E       CK LOCK ON ERROR          88453100
0DFD 0  70E6              MDX     A880       LOOP                      88453110
0DFE 0  2000       G881   LDS     0          SAVED BY STS ABOVE        88453120
0DFF 0  4802              8SC     C          SK IF CARRY OFF           88453130
0E00 0  7004              MDX     G883       CARRY ON                  88453140
0E01 00 44000FDE          8SI  L  F005       CK LOCK ON ERROR          88453150
0E03 0  70E0              MDX     A880       LOOP                      88453160
0E04 0  7006              MDX     A884       EXIT TO NEXT ROUTINE      88453170
0F05 00 44000F83   G883   8SI  L  F000       CARRY ON (SHOULD NOT BE)  88453180
0E07 0  3160              DC      /3160      ERR ID                    88453190
0E08 00 44000FDE          8SI  L  F005       CK LOCK ON ERROR          88453200
0E0A 0  7009              MDX     A880       LOOP                      88453210
                   ****************************************************88453220
0E0B 00 65800FE3   A864   LDX  I1 N887       LD XR 1 WITH /FF00        88453230
0E0D 00 CC000FF0          LDD  L  N864       LD  A=/0001  Q=/0010      88453240
0E0F 0  2000              LDS     0          SET C AND OF OFF          88453250
0E10 0  1140              SLCA 1  0          ACC NOW /8000             88453260
0E11 0  2818              STS     G885       STORE C AND OF CONDITION  88453270
0E12 00 F4000EE2          EOR  L  N886       ZERO WITH /8000           88453280
0E14 00 4C180E19          8SC  L  G884,+-    BRANCH ON ZERO            88453290
0E16 00 44000F83          8SI  L  F000       ACC NOT=/8000             88453300
0E1B 0  313D              DC      /313D      ERR ID                    88453310
0E19 00 44000F82   G884   8SI  L  F00E       CHECK LOOP SWITCH         88453320
0E1B 00 44000F82          MDX     A884       LOOP                      88453330
0E1B 0  70EF              MDX     A884       LOOP                      88453330
0E1C 00 6D000EDC          STX  L1 N880       STORE C(XR 1) AT N880     88453340
0E1E 00 4C000EDC          LD   L  N880       LD C(N880)                88453350
0E20 00 F4000EEA          EOR  L  N88E       ZERO WITH /FF01           88453360
0E22 00 4C180E27          8SC  L  G886,+-    BRANCH ON ZERO            88453370
0E24 00 44000F83          8SI  L  F000       XR-1 NOT FF01             88453380
0E26 00 313E              DC      /313E      ERR ID                    88453390
0E27 00 44000FB2   G886   8SI  L  F00E       CK LOCK ON ERROR          88453400
0E29 0  70E1              MDX     A884       LOOP                      88453410
0E2A 0  2000       G885   LDS     0          SAVED BY STS ABOVE        88453420
0E2B 0  4B02              8SC     C          SK IF CARRY OFF           88453430
0E2C 0  7003              MDX     G887       CARRY OFF ( SHOULD BE ON) 88453440
0E2D 00 4C000F83          8SC  L  F000       CARRY OFF ( SHOULD BE ON) 88453450
0E2F C  3161              DC      /3161      ERR ID                    88453460
0E30 00 44000FDE   G887   8SI  L  F005       CK LOCK ON ERROR          88453470
0E32 0  70D8              MDX     A884       LOOP                      88453480
                   ****************************************************88453490
                   ****************************************************88453500
CORE   DATA OR     *LA- OPER-                                          88453510
ADDR   INSTRUCTION *8EL ATION FT OPERANDS + REMARKS   ID+SEQ= AT RIGHT 88453520
                   ****************************************************88453530
0E33 00 65800FE1   A88F   LDX  I1 N885       LD XR 1 WITH /0010        88453540
0E35 00 CC000FE2          LDD  L  N886       LD  A= /8000  Q=/FF00     88453550
0E37 0  1140              SLCA 1  0          ACC NOW /8000             88453560
0E38 00 F4000FE2          EOR  L  N886       ZERO WITH /8000           88453570
0E3A 00 4C180E3F          8SC  L  G888,+-    BRANCH ON ZERO            88453580
0E3C 00 44000F83          8SI  L  F000       ACC NOT=8000              88453590
0E3E 0  313F              DC      /313F      ERR ID                    88453600
0E3F 00 44000F82   G888   8SI  L  F00E       CK LOCK ON ERROR          88453610
0E41 0  70F1              MDX     A888       LOOP                      88453620
0E42 00 6D000EDC          STX  L1 N880       STORE C(XR 1) IN N880     88453630
0E44 00 C4000EDC          LD   L  N880       LD C(N880)                88453640
0E46 00 F4000FE1          EOR  L  N885       ZERO WITH /0010           88453650
0E48 00 4C180E4D          8SC  L  G88A,+-    BRANCH ON ZERO            88453660
0E4A 00 44000F83          8SI  L  F000       XR 1 NOT=0010             88453670
0E4C 0  3140              DC      /3140      ERR ID                    88453680
0E4D 00 44000FDE   G88A   8SI  L  F005       CK LOCK ON ERROR          88453690
0E4F 0  70F3              MDX     A888       LOOP                      88453700
                   ****************************************************88453710
0F50 0  6110       A889   LDX  1  16         LD XR 1 WITH /0010        88453720
0F51 0  6210              LDX  2  16         LD XR 2 WITH /0010        88453730
0F52 0  6310              LDX  3  16         LD XR 3 WITH /0010        88453740
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PROCESSOR-CONTROLLER FUNCTION TEST

```
0E53 00 C4000EE0          LD   L  N884       LD A=/0001                88453750
0E55 0  1041              SLCA 1             ACC NOW /0002             88453760
0E56 00 F4000EE7          EOR  L  N888       ZERO WITH /0002           88453770
0E58 00 4C180E50          8SC  L  G889,+-    BRANCH ON ZERO            88453780
0E5A 00 44000F83          8SI  L  F000       NON INDEXED SLCA FAILED   88453790
0E5C 0  3162              DC      /3162      ERR ID                    88453800
0E5D 00 44000FDE   G889   BSI  L  F005       CK LOCK ON ERROR          88453810
0E5F 0  70F0              MDX     A889       LOOP                      88453820
                   ****************************************************88453830
0E60 0  6110       A88A   LDX  1  16         LD XR 1 WITH /0010        88453840
0E61 0  6210              LDX  2  16         LD XR 2 WITH /0010        88453850
0E62 0  6310              LDX  3  16         LD XR 3 WITH /0010        88453860
0E63 00 CC000EDE          LDD  I  N882       LD A=/0000  Q=/FFFF       88453870
0E65 0  10CF              SLC     15         NOW  A-/7FFF  C=/1000     88453880
0E66 00 F4000EE8          EOR  L  N88F       ZERO WITH /7FFF           88453890
0E68 00 4C180E68          BSC  L  G865,+-    NON INDEXED SLC FAILED    88453900
0E6A 0  3173              DC      /3173      ERR ID                    88453910
0E68 00 44000FDE   G888   8SI  L  F005       CK LOCK ON ERROR          88453920
0E60 0  70F2              MDX     A88A       LOOP                      88453930
                   ****************************************************88453940
                   ****************************************************88453950
0E6E 00 65800EE8   A88C   LDX  I1 N88C       LD XR 1 WITH /0020        88453960
0E70 0  C873              LDD     N889       LD  A=/0000  Q=/0000      88453970
0E71 0  11C0              SLC  1  0          ACC NOW A=/0000  Q=/0000  88453980
0E72 00 4C180E77          8SC  L  G68C,+-    BRANCH ON ZERO            88453990
0E74 00 44300F83          8SI  L  F000       ACC NOT=0000              88454000
0E76 0  3141              DC      /3141      ERR ID                    88454010
0E77 00 44000F82   G88C   8SI  L  F00E       CK LOCK ON ERROR          88454020
0E79 0  70F4              MDX     A88C       LOOP                      88454030
0E7A 0  18D0              RTE     16         ACC NOW  A=/0000  C=/0000  88454040
0E7B 00 4C180E80          8SC  L  G88E,+-    BRANCH ON ZERO            88454050
0E7D 00 44000F83          8SI  L  F000       Q REG NCT=0000            88454060
0E7F 0  3142              DC      /3142      ERR ID                    88454070
0E80 00 44000F82   C88E   8SI  L  F00E       CK LOCK ON ERROR          88454080
0E82 0  70E8              MDX     A88C       LOOP                      88454090
0E83 0  6958              STX  1  N880       STORE C(XR 1) IN N880     88454100
0E84 0  C057              LD      N880       LD C(N880)                88454110
0E85 00 4C180E8A          8SC  L  J880,+-    BRANCH ON ZERO            88454120
0E87 00 44000F83          8SI  L  F000       XR 1 NOT=0000             88454130
0E89 0  3143              DC      /3143      ERR ID                    88454140
0E8A 00 44000FDE   J880   8SI  L  F005       CK LOCK ON ERROR          88454150
0E8C 0  70E1              MDX     A88C       LOOP                      88454160
                   ****************************************************88454170
                   ****************************************************88454180
CORE   DATA OR     *LA- OPER-                                          88454190
ADDR   INSTRUCTION *8EL ATION FT OPERANDS + REMARKS   ID+SEQ= AT RIGHT 88454200
                   ****************************************************88454210
0E8D 00 65800EE9   B882   LDX  I1 N88D       LD XR 1 WITH /FF0F        88454220
0E8F 0  C856              LDD     N83A       LD  A=/0000  C=/0002      88454230
0E90 0  11C0              SLC  1  0          NOW A=/0000  Q=/0000      88454240
0E91 0  F050              EOR     N886       ZERO WITH /8000           88454250
0E92 00 4C180E97          8SC  L  J882,+-    BRANCH ON ZERO            88454260
0E94 00 44000F83          8SI  L  F000       ACC NOT=/8000             88454270
0E96 0  3144              DC      /3144      ERR ID                    88454280
0E97 00 44000F82   J882   8SI  L  F00E       CK LOCK ON ERROR          88454290
0E99 0  70F3              MDX     8882       LOOP                      88454300
0E9A 0  18D0              RTE     16         NOW  A=/0000  Q=/8000     88454310
0E9B 00 4C180EA0          8SC  L  J884,+-    BRANCH ON ZERO            88454320
0E90 00 44000F83          8SI  L  F000       Q REG NOT=0000            88454330
0E9F 0  3145              DC      /3145      ERR ID                    88454340
0EA0 00 44000F82   J884   8SI  L  F00E       CK LOCK ON ERROR          88454350
0EA2 0  70EA              MDX     8882       LOOP                      88454360
0EA3 0  6938              STX  1  N880       STORE C(XR 1) AT N880     88454370
0EA4 0  C037              LD      N880       LD C(N880)                88454380
0EA5 00 F4000EEA          EOR  L  N88E       ZERO WITH /FF01           88454390
0EA7 00 4C180EAC          8SC  L  J866,+-    BRANCH ON ZERO            88454400
0EA9 00 44000F83          8SI  L  F000       XR-1 NOT FF01             88454410
0EAB 0  3146              DC      /3146      ERR ID                    88454420
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OFAC 00 44000FDE   JA86  BSI  L  F005       CK LOCK ON ERROR       88454430
OEAE 0  70DE        MDX     8882             LOOP                   88454440
                    ****************************************        88454450
OEAF 0  C836  68B4  LOD     N88A    LD A=/0000 Q=/00D2             88454460
OEBO 0  611F        LDX  1  31      LD XR 1 WITH /001F             88454470
OEB1 D  11C0        SLC  1  0       NOW A=/8000  Q=/0000          88454480
OEB2 U  4802        BSC     C       SK IF CARRY OFF               88454490
OEB3 D  7003        MDX     J887    CARRY ON                      88454500
OEB4 00 44000F83    BSI  L  F000    CARRY NOT ON                  88454510
OFB6 0  3147        DC      /3147   ERR ID                        88454520
OEB7 00 44000FB2  J887 BSI L FOOE   CK LOCK ON ERROR              88454530
OEB9 0  70F5        MDX     B884    LOOP                          88454540
OEBA 0  F027        EOR     N886    ZERO WITH /8000               88454550
OEBB 00 4C180ECO    BSC  L  J888,+- BRANCH ON ZERO                88454560
OEBD 00 44000F83    BSI  L  F000    ACC NOT EQUAL 8000            88454570
OEBF 0  3148        DC      /3148   ERR ID                        88454580
OECO 00 44000FB2  J888 BSI L FODE   CK LOCK ON ERROR              88454590
OEC2 0  70EC        MDX     B884    LOOP                          88454600
OEC3 00 6D000EDC    STX  L1 N880    STORE XR 1 WITH C(N880)       88454610
OEC5 U  CO16        LD      N880    LD C(N880)                    88454620
OEC6 0  F019        EOR     N884    ZERO WITH /0001               88454630
OEC7 00 4C180ECC    BSC  L  J889,+- BRANCH ON ZERO                88454640
OEC9 00 44000F83    BSI  L  F000    XR 1 NOT EQUAL 0001           88454650
OECB 0  3149        DC      /3149   ERR ID                        88454660
OECC 00 44000FDE  J889 BSI L F005   CK LOCK ON ERROR              88454670
OECE 0  70E0        MDX     B884    LOOP                          88454680
                    ****************************************        88454590
OECF 0  611C  B885  LDX  1  28      LD XR 1 WITH /001C            88454700
OEDO 0  C815        LDD     N88A    LD A=/0000  Q=/0002           88454710
OED1 0  1100        SLA  1  0       NOW A=/2000  Q=/0000          88454720
OED2 0  4802        BSC     C       SKIP IF CARRY OFF             88454730
OED3 0  7001        MDX     J88A                                  80454740
OED4 0  7003        MDX     J88B                                  88454750
OED5 00 44000F83  J86A BSI L F000   CARRY IS ON                   88454760
OED7 0  314A        DC      /314A   ERR ID                        88454770
OED8 00 44000FDE  J88B BSI L F005   CK LOCK ON ERROR              88454780
OEDA 0  70F4        MDX     9885    LOOP                          88454790
OEDB 0  701D        MDX     B8A0    EXIT TO NEXT ROUTINE          88454800
OEDC 0  0000  N880  DC      /0000                                 88454810
OEDE 0  0000        BSS  E                                        88454820
OEDE 0  0000  N882  DC      /0000                                 88454830
OEDF 0  FFFF        DC      /FFFF                                 88454840
OEE0 0  0001  N884  DC      /0001                                 88454850
OEE1 0  D010  N885  DC      /0010                                 88454860
OEE2 0  8000  N886  DC      /8000                                 88454870
OEE3 0  FFD0  N887  DC      /FFD0                                 88454880
OEE4 0  0000  N888  DC      /0000                                 88454890
OEE5 0  D000        DC      /0D0D                                 88454900
OEE6 0  0000  N88A  DC      /0000                                 88454910
OEE7 0  0002  N88B  DC      /0002                                 88454920
OEE8 0  0020  N88C  DC      /0020                                 88454930
OEE9 0  FFDF  N88D  DC      /FFDF                                 88454940
OEEA 0  FF01  N88E  DC      /FF01                                 88454950
OEEB 0  7FFF  N88F  DC      /7FFF                                 88454960
                    ****************************************        88454970
                    ****************************************        88454980
                    *                                             88454990
                    *         TEST COMPARE INSTRUCTION            88455000
                    *                                             88455010
                    *  A = ACCUMULATOR                            88455020
                    *  Q = ACCUMULATOR EXTENTION                  88455030
                    *  M = WORD BEING COMPARED                    88455040
                    *  M+1 = 2ND WORD ON OCM                      88455050
                    *                                             88455060
                    *    THE 1800 HAS A COMPARE INSTRUCTION       88455070
                    *    BUT THE 1130 DOES NOT. THIS ROUTINE      88455080
                    *    DETERMINES WHICH MACHINE IS BEING        88455090
                    *    TESTED BEFORE ATTEMPTING A COMPARE       88455100
```

```
                    *         INSTRUCTION.                        88455110
                    *                                             88455120
                    *         INDEX REGISTERS ARE HARDWARE IN 1800 88455130
                    *         AND CORE STORAGE LOCATIONS IN 1130.  88455140
                    *                                             88455150
          ****************************************************      88455160
CORE    DATA OR  *LA- OPER-                                        88455170
ADDR    INSTRUCTION *BEL ATION FT OPERANDS + REMARKS  ID+SEQ= AT RIGHT 88455180
          ****************************************************      88455190
OEEC 0  1810  B8A0  SRA     16      CK FOR 1130 OR 1800           88455200
OEED 00 D4000OD1    STO  L  /0001   STORE /0000 AT ADDR /0001     8845521D
OEEF 0  61FF        LDX  1  -1      LD XR 1 WITH /FFFF            8845522D
OEF0 00 C4000001    LD   L  /0001   LD C(/0001)                  88455230
OEF2 00 4C200F76    BSC  L  W8C0,Z  BRANCH IF 1130                8845524D
OEF4 0  C075        LD      N8A2    LD C(N8A2)  /4000             88455250
OEF5 0  8072        CMP     N8A0    A GREATER THAN M             88455260
OEF6 0  7004        MDX     J8A0    A GREATER THAN M             88455270
OEF7 0  1000        SLA     0       A LESS THAN M                88455280
OEF8 00 44000F83    BSI  L  F000    A GREATER THAN M FAILED      88455290
OEFA 0  3148        DC      /3148   ERR ID                       88455300
OEFB 00 44000FB2  J8A0 BSI L FOOE   CK LOCK ON ERROR             88455300
OEFD 0  70EE        MDX     B8A0    LOOP                         88455320
OEFE 0  F068        EOR     N8A2    ZERO WITH /4000              88455330
OEFF 00 40180F07    BSC  L  B8A1,+- BRANCH ON ZERO               88455340
OF01 00 44000F83    BSI  L  F000    ACC CHANGED ERROR            88455350
OF03 0  314C        DC      /314C   EPR ID                       88455360
OF04 00 44000FDE    BSI  L  F005    CK LOCK ON ERROR             88455370
OF06 0  70E5        MDX     B8A0    LOOP                         88455380
                    ****************************************       88455390
OF07 0  C060  B8A1  LD      N8A0    N8A0 =/0000                  88455400
OF08 0  B060        CMP     N8A1    N8A1 =/1000                  88455410
OF09 0  7003        MDX     J8A2    A LESS THAN M FAILED         88455420
OFOA 0  7003        MDX     J8A1    A LESS THAN M                88455430
OF0B 00 44000F83  J8A2 BSI L F000   A LESS THAN M FAILED         88455440
OF0D 0  314D        DC      /314D   ERR ID                       88455450
OFOE 00 44000FDE  J8A1 BSI L F005   CK LOCK ON ERROR             88455460
OF10 0  70F6        MDX     B8A1    LOOP                         88455470
                    ****************************************       88455480
OF11 0  C056  B8A2  LD      N8A0    N8A0 =/0000                  88455490
OF12 0  B058        CMP     N8A3    N8A3 =/2000                  88455500
OF13 0  7001        MDX     J8A4    A LESS THAN M FAILED         88455510
OF14 0  7003        MDX     J8A3    A LESS THAN M                88455520
OF15 00 44000F83  J8A4 BSI L F000   A LESS THAN M FAILED         88455530
OF17 0  314E        DC      /314E   ERR ID                       88455540
OF18 00 44000FDE  J8A3 BSI L F005   CK LOCK ON ERROR             88455550
OF1A 0  70F6        MDX     B8A2    LOOP                         88455560
                    ****************************************       88455570
OF1B 0  C04C  B8A3  LD      N8A0    N8A0 =/0000                  88455580
OF1C 0  B040        CMP     N8A2    N8A2 =/4000                  88455590
OF1D 0  7003        MDX     J8A6    A LESS THAN M FAILED         88455600
OF1E 0  7003        MDX     J8A5    A LESS THAN M                88455610
OF1F 00 44000F83  J8A6 BSI L F000   A LESS THAN M FAILED         88455620
OF21 0  314F        DC      /314F   ERR ID                       88455630
OF22 00 44000FDE  J8A5 BSI L F005   CK LOCK ON ERROR             88455640
OF24 0  70F6        MDX     B8A3    LOOP                         88455650
                    ****************************************       88455660
OF25 0  C046  B8A4  LD      N8A4    LD /8000                     88455670
OF26 0  8041        CMP     N8A0    COMPARE C(N8A0) /0000        88455680
OF27 0  7001        MDX     J8A8    A LESS THAN M FAILED         88455690
OF28 0  7003        MDX     J8A7    A LESS THAN M                88455700
OF29 00 44000F83  J8A8 BSI L F000   A LESS THAN M FAILED         88455710
OF2B 0  3150        DC      /3150   ERR ID                       88455720
OF2C 00 44000FDE  J8A7 BSI L F005   CK LOCK ON ERROR             88455730
OF2E 0  70F6        MDX     B8A4    LOOP                         88455740
                    ****************************************       88455750
OF2F 0  C039  B8A5  LD      N8A1    LD /1000                     88455760
OF30 0  B038        CMP     N8A1    CMP /1000                    88455770
OF31 0  7002        MDX     J8AA    A EQUAL M FAILED             88455780
```

PROCESSOR-CONTROLLER FUNCTION TEST

```
OF32 0  7001          MOX     J8AA     A EQUAL M FAILEO           88455790
OF33 0  7003          MDX     J8A9     A=M                        88455800
OF34 00 44000F83  J8AA 8S1 L  F000     A=M FAILEO                 88455810
OF36 0  3151          OC      /3151    ERR 10                     88455820
OF37 00 44000FDE  J8A9 8S1 L  F005     CK LOCK ON ERROR           88455830
OF39 0  70F5          MOX     88A5     LOOP                       88455840
          ***********************************************          88455850
        *                                                          88455860
        *                        TEST DOUBLE CCMPARE               88455870
        *                                                          88455880
*******************************************************************  88455890
CORE     OATA OR   *LA- OPER-                                       88455900
AODR     INSTRUCTION *BEL AT1ON FT OPERANDS + REMARKS   10+SEQ= AT RIGHT 88455910
*******************************************************************  88455920
OF3A 0  C835     88CO LOO     N8C6     LO  A=/8000  Q=/0001        88455930
OF3B 0  B832          DCM     N8C5     AQ GREATER THAN M, M+1      88455940
OF3C 0  7003          MOX     J8CO                                88455950
OF3D 0  1000          SLA     0        NO-OP                      88455960
OF3E 0  4044          BSI     F000     FAILEO A,Q NCT GREATER     88455970
OF3F 0  3152          DC      /3152    ERR 1D                     88455980
OF40 00 44000FH2  J8CO BSI L  F00E     CK LOCK ON ERROR           88455990
OF42 0  70F7          MOX     88CO     LOOP                       88456000
OF43 0  F02C          EOR     N8C6     ZERO WITH /8000            88456010
OF44 00 4C180F48      BSC L   J8C1,+-  BRANCH ON ZERO             88456020
OF46 0  403C          BSI     F000     ACC CHANGEO                88456030
OF47 0  3153          DC      /3153    ERR ID                     88456040
OF48 00 44000FB2  J8C1 8S1 L  F00E     CK LCCK ON ERROR           88456050
OF4A 0  70EF          MDX     88CO     LOOP                       88456060
OF48 0  1800          RTE     16       NOW A=/0001  Q=/0000       88456070
OF4C 0  F024          EOR     N8C6+1   ZERO WITH /0001            88456080
OF4D 00 4C180F51      BSC L   J8C2,+-  BRANCH ON ZERO             88456090
OF4F 0  4033          BSI     F000     Q REG CHANGEO              88456100
OF50 0  3154          DC      /3154    ERR IO                     88456110
OF51 00 44000FDE  J8C2 BSI L  F005     CK LOCK ON ERROR           88456120
OF53 0  70E6          MDX     88CO     LOOP                       88456130
          ***********************************************          88456140
OF54 0  C81D     88C1 LDD     N8C7     LO  A=/0000  Q=/8000        88456150
OF55 0  8H1E          DCM     N8C8     A,Q LESS THAN M, M+1        88456160
OF56 0  7001          MDX     JPC3     A,Q GREATER THAN M,M+1      88456170
OF57 0  7002          MDX     J8C4     A.Q LESS THAN M,M+1        88456180
OF58 0  402A     J8C3 8S1     F000     FAILEO A,Q GREATER         88456190
OF59 0  3155          OC      /3155    ERR 10                     88456200
OF5A 00 44000FDE  J8C4 8S1 L  F005     CK LOCK ON ERROR           88456210
OF5C 0  70F7          MDX     88C1     LOOP                       88456220
          ***********************************************          88456230
OF5D 0  C814     B8C2 LOO     N8C7     LO  A=/0000  Q=/8000        88456240
OF5E 0  8813          OCM     N8C7     A,Q EQUQL M,M+1            88456250
OF5F 0  7002          MDX     J8C5     A,Q GREATER                88456260
OF60 0  7001          MDX     J8C5     A,Q LESS                   88456270
OF61 0  7002          MDX     J8C6     A,Q = M,M+1                88456280
OF62 0  4020     J8C5 BSI     F000     A,Q = M,M+1 FAILEO         88456290
OF63 0  3156          OC      /3156    ERR 10                     88456300
OF64 00 44000FDE  J8C6 BSI L  F005     CK LOCK ON ERROR           88456310
OF66 0  70F6          MOX     B8C2     LOOP                       88456320
OF67 0  700E          MOX     W8CO     EX1T TO NEXT ROUTINE       88456330
OF68    0000          8SS E   0                                   88456340
OF68 0  0000     N8A0 OC      /0000                               88456350
OF69 0  1000     N8A1 OC      /1000                               88456360
OF6A 0  4000     N8A2 DC      /4000                               88456370
OF68 0  2000     N8A3 DC      /2000                               88456380
OF6C 0  8000     N8A4 OC      /8000                               88456390
OF6E    0000          8SS E   0                                   88456400
OF6F 0  8000     N8C5 DC      /8000                               88456410
OF6F 0  0000          DC      /0000                               88456420
OF70 0  8000     N8C6 DC      /8000                               88456430
OF71 0  0001          DC      /0001                               88456440
OF72 0  0000     N8C7 OC      /0000                               88456450
OF73 0  8000          DC      /8000                               88456460
```

PROCESSOR-CONTROLLER FUNCTION TEST

```
OF74 0  0000     N8C8 OC      /0000                               88456470
OF75 0  8001          DC      /8001                               88456480
          *****************************************************     88456490
          *****************************************************     88456500
                                                                   88456510
CORE     OATA OR   *LA- OPER-                                       88456520
ADDR     INSTRUCTION *BEL AT1ON FT OPERANDS + REMARKS   1D+SEC= AT P1GHT 88456530
*******************************************************************  88456540
OF76 0  0809     W8CO XIO     N8C1     READ SWITCHES              88456550
OF77 0  C00A          LD      N8C3     LD SW BITS                 88456560
OF78 0  1804          SRA     4        PLACE SW 11 AT 81T 15 POS. 88456570
OF79 0  4804          BSC     E        IS SWITCH 11 ON            88456580
OF7A 0  7002          MDX     W8C4     SWITCH 11 ON               88456590
OF78 0  C003          LD      Z020     SWITCH 11 IS OFF-WAIT      88456600
OF7C 0  3003     X007 DC      /3003    PROGRAM F1N1SHEO           88456610
OF7D 00 4C000154  W8C4 BSC L  A140                                88456620
OF7F 0  0003     Z020 OC      /0003                               88456630
OF80    0000          BSS E                                      88456640
OF80 0  0F82     N8C1 DC      N8C3                                88456650
OF81 0  0240     N8C2 DC      /0240    EQUAL /3A00 1N 1130        88456660
OF82 0  0000     N8C3 OC      /0000                               88456670
        *                                                          88456680
        *                                                          88456690
          ***********************************************          88456700
        *                                                          88456710
        *                ERROR CONTROL ROUTINE                     88456720
        *                                                          88456730
OF83 0  0000     F000 OC      0        REENTER ADDRESS            88456740
OF84 0  2816          STS     F00X     SAVE STATUS                88456750
OF85 0  D063          STO     U000     SAVE A REG                 88456760
OF86 0  1800          RTE     16                                  88456770
OF87 0  D062          STO     U001     SAVE Q REG                 88456780
OF88 0  0863          XIO     F003     READ SWITCHES              88456790
OF89 0  C066          LD      Z000     LD SW READINGS             88456800
OF8A 0  1807          SRA     7        PLACE SW B AT BIT POS 15   88456810
OF8B 0  4804          BSC     E        CK LOOP ON 1NSTRUCTION     88456820
OF8C 0  7012          MDX     F00A     * BEING TESTED SW          88456830
OF8D 00 C4300F83      LD  I   F000     GET WAIT ERROR 1D          88456840
OF8F 0  D00C          STO     F002     STORE ERROR ID AT F002     88456850
OF90 0  C0F2          LD      F000     GET RETURN ADDR            88456860
OF91 0  D01F          STO     U00B     STURE AT U00B              88456870
OF92 0  805C          A       U006     ADD ONE                    88456880
OF93 0  D0EF          STG     F000     STORE NEW RETURN ADCRESS   88456890
OF94 0  C05B     F00L LD      Z000     CK 8YPASS EPROR SW         88456900
OF95 0  1801          SRA     1        PLACE SW 14 AT BIT POS 15  88456910
OF96 0  4804          BSC     E        SKIP IF SW 14 OFF          88456920
OF97 0  700D          MDX     F00F     CK FOR 8 OR 12 ON ALSO     88456930
OF98 0  C051          LD      U001     RESTORE REG AND WAIT       88456940
OF99 0  1800          RTE     16       PLACE 1N Q REG             88456950
OF9A 0  C04E          LD      U000     RESTORE A PEG              88456960
OF98 0  2000     F00X LDS     0        RESTORE C AND OF 1ND.      88456970
OF9C 0  3000          F002 WAIT     0  ERROR WAIT  B REG          88456980
                               * SHOWS ERROR ID                   88456990
OF9D 00 4C800F83  F00B 8SC 1  F000     EX1T FRCM ROUTINE          88457000
        *                      * C1F00011S NOW ONE                88457010
        *                      * GREATER THAN AT THE               88457020
        *                      * BEGINNING OF KOUTINE              88457030
        *                                                          88457040
        *                                                          88457050
        *                                                          88457060
        *                      LOOP ON INSTRUCTION 8E1NG           88457070
        *                      * TFSTED                            88457080
        *                                                          88457090
*******************************************************************  88457100
CORE     OATA OR   *LA- OPER-                                       88457110
AODR     INSTRUCTION *BEL AT1ON FT OPERANDS + REMARKS   1D+SEQ= AT RIGHT 88457120
*******************************************************************  88457130
OF9F 0  C0E3     F00A LD      F000     GET RETURN AODR AT F000    88457140
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PROCESSOR-CONTROLLER FUNCTION TEST

```
0FA0 0  D010           STD    U00B    STORE RETURN AODRESS      88457150
0FA1 0  800D           A      U003    AOD 3                     88457160
0FA2 0  D0E0           STO    F000    UPDATE RETURN ADDRESS     88457170
0FA3 00 4C800F83       BSC  I F000    BR TO UPDATAD ADDRESS     88457180
        *                             CK FOR SW 8 OP 12         88457190
0FA5 0  1802    F00F SRA    2         PLACE SW 12 AT BIT POS 15 88457200
0FA6 0  4804         8SC    F         SKIP IF SW 12 OFF         88457210
0FA7 0  70F5         MOX    F00B      BR TO EXIT IF SW 12 ON    88457220
0FA8 0  1804         SPA    4         PLACE SW 8 AT BIT POS 15  88457230
0FA9 0  4804         6SC    E         SKIP IF SW 8 OFF          88457240
0FAA 0  70F2         MOX    F00B      BR TO EXIT IF SW 8 ON     88457250
0FAB 0  C044         LO     Z000      LD SWITCH READOINGS       88457260
0FAC 0  0000         OC                IMPROPER BIT SWS, 14 ON  88457270
0FAD 0  083E         XIO    F003      *WITHOUT 8 OR 12 ON       88457280
0FAE 0  70E5         MDX    F00L                                88457290
0FAF 0  0003    U003 OC     3         CONSTANT 3                88457300
0FB0 0  FFFD    U00A DC     -3        CONSTANT -3               88457310
0FB1 0  0000    U008 DC     0         ERROR OCCURED CONTROL     88457320
        *                                                       88457330
        *************************************                   88457340
        *                                                       88457350
        *           LOCK ON ERROR RT                            88457360
        *                                                       88457370
****************************************************            88457380
CORE    DATA OR  *LA- OPER-                                      88457390
ADDR    INSTRUCTION *8EL ATION FT OPERANDS + REMARKS  ID+SEQ= AT RIGHT 88457400
****************************************************            88457410
0FB2 0  0000    F00E DC     0         CONTAINS RETURN AODRESS   38457420
0FB3 0  281A         STS    F00H      SAVE REGS  C AND OF       88457430
0FB4 0  D040         STO    U00X      ACCUMULATOR               88457440
0FB5 0  1800         RTE    16                                  88457450
0FB6 0  D03F         STO    U00X+1    ACC EXTENTION             88457460
        *                                                       88457470
        ********************************************            88457480
        *  SET UP FOR RESTART                         *         88457490
        *                                             *         88457500
        *  TO RESTART -- PRESS STOP, RESET AND START. *         88457510
        *                                             *         88457520
0F87 0  C03F         LD     RS11      LO /6004                  88457530
        *                                             *         88457540
0F88 00 D4000000     STO  L /0000     STO IN WORD ZERO          88457550
        *                                             *         88457560
0FBA 0  C03D         LO     RST2      LO /4C00                  88457570
        *                                             *         88457580
0FBB 00 D4000004     STO  L /0004     STO IN WORD FOUR          88457590
        *                                             *         88457600
0FBD 0  C03B         LO     RST2+1    LO /012C                  88457610
        *                                             *         88457620
0FBE 00 D4000005     STO  L /0005     STO IN WORD FIVE          88457630
        *                                             *         88457640
        ********************************************            88457650
0FC0 0  0828         XIO    F003      READ SWITCHES             88457660
0FC1 0  C02E         LO     Z000      CK LOOP ON INST 8EING     88457670
0FC2 0  1807         SRA    7         * TESTED SW               88457680
0FC3 0  4804         8SC    E         SKIP IF EVEN              88457690
0FC4 0  700A         MOX    F008      EXIT TO LOOP INST         88457700
0FC5 0  C0EB         LD     U008      CK IF ERROR HAS           88457710
0FC6 0  4820         BSC    Z         * OCCURRED                88457720
0FC7 0  7009         MOX    F009                                88457730
0FC8 0  C0E9    F00K LO     F00E      GOT RETURN AODR           88457740
0FC9 0  8025         A      U006      AOD ONE                   88457750
0FCA 0  00E7         STO    F00E      STORE RETURN AODRESS      88457760
0FCB 0  C02A         LO     U00X+I    RESTORE REGS              88457770
0FCC 0  1800         RTE    16                                  88457780
0FCD 0  C027         LO     U00X                                88457790
0FCE 0  2000    F00H LOS    0         SET C ANO OF OFF          88457800
0FCF 00 4C800FB2 F008 BSC I F00E      BR TO RETURN ADDRESS      88457810
0FD1 0  C01E    F009 LO     Z000      CHECK LOCK ON ERROR SW    88457820
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0FD2 0  1803         SRA    3         SHIFT BIT 12 TO POS 15    88457830
0FD3 0  4804         8SC    E         SKIP IF OFF               88457840
0FD4 0  7003         MDX    F00C      ERROR SW (8 12) ON        88457850
0FD5 0  1810         SRA    16        RESET ERROR OCCURRED      88457860
0FD6 0  000A         STD    U00B      * CONTROL                 88457870
0FD7 0  70F0         MDX    F00K      BR TO GET RETURN ADCRESS  88457880
0FD8 0  C0D9    F00C LD     F00E      GOT ADDR                  88457890
0FD9 0  800A         A      U00A      ADD MINUS THREE           88457900
0FDA 0  F006         EOR    U008      COMPARE TO ERR CCNTR      88457910
        *                             * ADOR                    88457920
0FDB 0  4820         8SC    Z         SKIP ON ZERO              88457930
0FDC 0  70E8         MDX    F00K      BR TO GET RETURN AODRESS  88457940
0FDD 0  70F1         MDX    F00B      EXIT                      88457950
        *                                                       88457960
        *************************************************       88457970
        *                             CK LOOP RT SW RT          88457980
        *                                                       88457990
*********************************************************       88458000
CORE    DATA OR  *LA- OPER-                                      88458010
ADDR    INSTRUCTION *8EL ATION FT OPERANDS + REMARKS   ID+SEQ= AT RIGHT 88458020
*********************************************************       88458030
0F0E 0  00C0    F005 DC     0         WILL CONTAIN RETURN ADCR  88458040
0FDF 0  080C         XIO    F603      READ SWS - PLACE IN LABEL 88458050
        *                             * ADDRESS Z000            88458060
0FE0 0  C00F         LD     Z000      CK LCOP ROUTINE SW        88458070
0FE1 0  1805         SRA    5         CHECK FOR BIT 11          88458080
0FE2 0  4804         8SC    E         NO SKIP FOR LOOP          88458090
0FE3 0  7003         MDX    F00G      LOOP ROUTINE SWITCH ON    88458100
0FE4 0  C0F9         LD     F005      LD RETURN ADDRESS         88458110
0FE5 0  D0CC         STO    F00E      SAVE FCR LCCK ON ERROR RTN 88458120
0FE6 0  70CC         MDX    F00E+I    BR TO SAVE REGISTERS      88458130
0FE7 00 4C800FDE F00G BSC I F005      BR TO MAIN PROGRAM        88458140
        *                             * RETURN ADDRESS          88458150
0FE9 0  0000    U000 DC     /0000     A REG SAVEO HERE          88458160
0FEA 0  0000    U00I DC     /0000     Q REG SAVEO HERE          88458170
0FEC    0000         BSS    E                                   88458180
0FEC 0  0FF0    F003 DC     Z000                                88458190
0FE0 0  0240    F0G4 DC     /0240     EQUAL /3A00 IN 1130       88458200
0FEE 0  0002    U004 DC     /0002                               88458210
0FEF 0  0001    U006 DC     /0001                               88458220
0FF0 0  0000    Z000 DC     /0000     SW READING STOREO HERE    88458230
0FF1 0  0001         DC     /0001                               88458240
0FF2    0000         BSS    E                                   88458250
0FF2 0  0000    U008 DC     /0000                               88458260
0FF3 0  0000    U009 DC     /0000                               88458270
0FF4 0  0240    F007 DC     /0240     EQUAL /3A00 IN I130       88458280
0FF5 0  0002    U00X BSS    2         SAVEO FOR A+Q STORAGE     88458290
0FF7 0  6004    RST1 LDX    /0004                               88458300
0FF8 00 4C00012E RST2 BSC L A080                                88458310
0FFA    0120         END    X000                                88458320
```

CROSS REFERENCE LISTING

SYMBOL	VALUE	REFERENCES
A0C0	013F	300F,3010,3011,3012,013A
A080	012E	3004,3005,3006,3007,3008,3009,300A,300B,300C,3000,300E,OFF8
A1C0	01E8	303D,303E,01E9
A1D0	01F5	303F,3040,3041,3042,3043,3044,3045,01F2
A1E0	0214	3046,3047,0210
A1F0	0220	3048,3049,0210
A100	014C	3013,3014,3015
A140	0154	3016,3017,3018,3019,301A,301B,301C,301D,301E,301F,3020,3021,3022,3023,3024,3025,3026,3027,3028,3029,302E,OF7D
A180	01A0	302A,302B,302C,302D,3C2F,3030,3031,3032,3033,3034,3035,3036,3037,3038,3039,303A,303B,303C,019E
A2CC	0337	3072,0341
A2C0	0319	306F,0312,0322
A2C4	0323	3070,022C
A2C8	0320	3071,0336
A200	0220	304A,304B,304C,304D,304E,304F,3050,3051,3052,3053,3054,3055,3056,3057,3058,3059,305A,305B,305C,305D,305E,305F,0229
A240	0270	3060,3061,3062,3063,3064,026B
A280	0209	306A,0288,02C8,02E2
A281	02E3	3068,02E0
A282	02EE	306C,02F8
A283	02F9	3060,0303
A284	0304	306E,0311
A3C0	0300	3080,3081,0306,03E9,03F3
A3C4	03F4	3082,3083,0407,0410
A300	0345	3073,0342,034E
A302	034F	3074,0359
A304	035A	3075,0364
A340	0368	3076,3077,0365,0373,0370
A38C	0380	307E,307F,03C8,0305
A380	0381	3078,3079,037E,038B,0395
A384	0396	307A,307B,039F,03A8
A388	03A9	307C,307D,0382,038C
A4CC	05AC	30A8,30A9,05B8,05C1
A4C0	0566	30A1,0562,0570
A4C2	0571	30A2,30A3,30A4,30A5,0571,0574,0582,058B,0595
A4C8	0596	30A6,30A7,05A2,05A8
A400	0419	3084,3085,3086,0411,0426,042E,0439
A408	043A	3087,3088,3089,0448,0450,0459
A44A	0500	3099,309A,3098,050C,0515,051F
A44C	04C4	3093,3094,3095,048C,04CF,0407,04E0
A444	04E1	3096,3097,3098,04E0,04F6,04FF
A480	0549	309F,0542,0554
A482	0555	30A0,0561
A5C0	074C	30CE,30CF,0747,0756,075F
A5C4	0760	3000,3001,076E,0778
A5C8	0779	3002,3003,0788,0792
A50A	0600	30AF,30B0,3170,0608,0612
A50C	0610	3081,3082,061C,0629,0630
A50E	0631	30B3,30B4,062A,0630,0644
A500	05C8	30AA,05C2,0502
A502	0503	30AB,0500
A504	050E	30AC,30AD,05E9,05F4
A508	05F5	30AE,05FF
A54A	06C1	30C0,30C1,0689,06CA,06D2
A54C	0603	30C2,30C3,06C8,06DC,06E4
A54E	06E5	30C4,30C5,06D0,06EE,06F6
A54F	06F7	30C6,30C7,06EF,07C1,0709
A540	0663	30B7,30B8,30B9,0654,0658,066F,0676,0686
A544	0687	308A,30B8,0670,0692,0699
A546	069C	30BC,30B0,0693,069A,06A7,06AE
A548	06AF	308E,308F,06A8,0688,06C0

A580	070F	30C8,30C9,0702,070A,0717,0720
A584	0721	30CA,30CB,072A,0734
A588	0735	30CC,30CD,0730,0746
A6C0	0964	30F0,30F1,0954,0958,0974,0978
A6C2	097C	30F2,30F3,0975,098C,0993
A6C4	0994	30F4,30F5,098D,09A3,09AA
A6C6	09A8	30F6,30F7,09A4,0988,09C2
A6C8	09C3	30F8,30F9,09BC,0903,090A,09E8
A6D0	09EC	3150,09D4,09D8,09F7
A602	09F8	315E,0A03
A603	0A04	315F,0A0F
A605	0A10	3163,0A18
A606	0A1C	3164,0A27
A6F0	0A28	3165,0A36
A6F1	0A39	3166,0A37,0A47
A60A	0707	3009,07E3
A60C	07E4	300A,07F0
A60E	07F1	3008,07F0
A600	079F	30D4,0796,07A7
A602	07A8	3005,0780
A604	0781	3006,078C
A606	078D	3007,07C9
A608	07CA	3008,0706
A64A	086C	30E3,0879
A64C	087A	30E4,0887
A640	0820	30DE,3167,081A,082C,0836
A642	0837	30DF,0843
A644	0844	30E0,0850
A646	0851	30E1,0850
A648	085E	30E2,0868
A660	088F	3157,3158,088A,089C,08A6
A662	08A7	3159,315A,0884,088E
A664	088F	3158,315C,08CC,0806
A670	0809	3169,08D7,08E2,08E9
A68C	0928	30E8,30EC,0932,0938
A680	08EC	30E5,30E6,08E3,08F7,0900
A684	0901	30C7,30E8,0908,0913
A688	0914	30E9,30EA,091E,0927
A7CC	0C30	3125,3126,0C46,0C4F
A7C0	0C01	311F,3120,08B3,0C08,0C15
A7C4	0C16	3121,3122,0C1F,0C29
A7C8	0C2A	3123,3124,0C33,0C3C
A70C	0A80	3100,3101,3102,0A99,0AA7,0AAE
A700	0A48	30FA,30FB,0A54,0A5E
A704	0A5F	30FC,30F0,0A68,0A75
A708	0A76	30FE,30FF,0A82,0A8C
A74C	0814	3108,310C,3100,310E,0820,082A,0836,0B30
A740	0A88	3103,3104,3105,3106,0AA8,0AAF,0AC8,0AD3,0A0F,0AE6
A746	0AE7	3107,3108,3109,310A,0AF5,0AFE,080C,0813
A78A	08C8	3118,311C,08D4,080E
A78E	080F	3110,311E,08E8,08F2
A780	088C	3115,3116,3117,3118,0870,0898,08A2,08AE,0885
A786	0886	3119,311A,08C0,08CA
A80C	0C82	312F,0CA8,0C8C
A80E	0C80	3130,0CC7
A800	0C58	3127,3128,3129,312A,0C50,0C68,0C73,0C7F,0C86
A806	0C87	312B,312C,312D,312E,0C80,0C94,0C9F,0CAA,0C81
A84A	00C6	3171,00CF
A840	006A	3135,0041,0077
A842	0078	3136,316F,0D8C
A844	0080	3137,009B
A846	009C	3138,00A5
A848	00A6	3139,00AF
A849	0080	313A,3168,0DC5
A85A	0000	3172,0008
A88A	0E60	3173,0E60
A88C	0E6E	3141,3142,3143,0E79,0E82,0E8C
A880	0DE4	3138,313C,3160,0009,0DF3,0DF0,0E03,0E0A

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AB84   0F06   3130,313F,3161,0F04,0F1B,0E29,0E32
AB8B   0E33   313F,3140,0E41,0E4F
A889   0F50   3162,0E5F
A900   0282   3065,3066,3067,3068,3069
B40A   0497   3090,3091,3092,04AA,04B2,04BB
B400   D45A   308A,308B,308C,0465,046E,0477
B406   0478   308D,308E,308F,0484,048D,0496
F440   0520   309C,309D,309E,0530,0538,0541
B500   0645   3085,3086,053E,0653,065A
B600   07FE   30DC,0808
B602   C80C   30DD,0819
B680   093C   30FD,30EE,30FF,0947,0953,095A
B742   0B3E   310F,3110,3111,3112,0B4A,0B54,0B60,0B67
B747   0B68   3113,3114,0B72,0B7C
B8A0   0EEC   314B,314C,0EDB,0EFD,0F06
BBA1   0F07   314D,0EFF,0F10
BBA2   0F11   314E,0F1A
B8A3   0F1B   314F,0F24
B8A4   0E25   3150,0F2E
B845   0F2F   3151,0F39
BBC0   0F3A   3152,3153,3154,0F42,0F4A,0F53
BBC1   0F54   3155,0F5C
BBC2   0F5D   3156,0F66
B800   0CCB   3131,0CD2
B802   0CD3   3132,0CDD
B804   0CDE   3133,0CE8
B806   0CE9   3134,0CF3
B807   0D18   316A,0CF4,0D22
B808   0D23   316B,0D2D
B809   0D2E   316C,316F,0D69
B810   0D3A   316D,316F,0D69
B882   0E8D   3144,3145,3146,0E99,0EA2,0EAE
B884   0EAF   3147,3148,3149,0EB9,0EC2,0ECE
B885   0ECF   314A,0EDA
F00A   0F9F   0F8C
F00B   0F9D   0FA7,0FAA
F00C   0FDB   0FD8
F00E   0FB2   0371,0389,03B0,03C9,03E7,0405,0424,042C,0446,044E,
               0463,046C,0482,048B,04A8,04B0,04CD,04D5,04EB,04F4,
               050A,0513,052E,0536,0580,0589,05A0,05B6,05E7,0609,
               0610,0660,0674,0715,0728,073B,0754,076C,0786,082A,
               089A,08B2,08CA,08E7,08F5,0909,091C,0930,0945,0A52,
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               0C44,0C66,0C71,0C92,0C9D,0D51,0D5A,0DE1,0DFB,0E19,
               0E27,0E3F,0E77,0E80,0E97,0EA0,0EB7,0EC0,0EFB,0F40,
               0F48,0FC8,0FCA,0FCF,0F08,0FE5,0FE6
F00F   0FA5   0F97
F00G   0FE7   0FE3
F00H   0FCE   0FB3
F00K   0FC8   0FD7,0FDC
F00L   0F94   0FAE
F00X   0F9B   0FB4
E000   0E83   3174,02DD,02E8,02F3,02FE,030C,031D,0327,0331,033C,
               0349,0354,035F,036E,0378,0386,0390,039A,03A3,03AD,
               03B7,03C6,03D0,03E4,03EE,0402,040B,0421,0429,0434,
               0443,044B,0454,0460,0469,0472,047F,0488,0491,04A5,
               04AD,04B6,04CA,04D2,04DB,04E8,04F1,04FA,0507,0510,
               051A,0528,0533,053C,054F,055C,056B,0577,057D,0586,
               0590,0599,05A6,05B3,058C,05CD,05D8,05E4,05EF,05FA,
               0606,060D,0617,0624,062B,063B,063F,0642,0655,066A,
               0671,0681,068D,0694,06A2,06A9,06B3,06BB,06C5,06CD,
               06D7,06DF,06E9,06F1,06FB,0704,0713,071B,0725,072F,
               0738,0741,0751,075A,0769,0773,0783,078D,07A2,07AB,
               07B7,07C4,07D1,07DE,07EB,07F8,0806,0814,0827,0831,
               083E,084B,0858,0866,0874,0882,0897,08A1,08AF,08B9,
               08C7,08D1,08E4,08E2,08FB,0906,090E,0919,0922,092D,
               0936,0942,094E,0955,096F,0976,0987,098E,099E,09A5,
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                      0AC3,0ACE,0ADA,0AE1,0AF0,0AF9,0B07,0B0E,0B18,0B25,
                      0B31,0B38,0B45,0B4F,0B5B,0B62,0B6D,0B77,0B93,0B9D,
                      0BA9,0BB0,0BBB,0BC5,0BCF,0BD9,0BE3,0BED,0C06,0C10,
                      0C1A,0C24,0C2E,0C37,0C41,0C4A,0C63,0C6E,0C7A,0C81,
                      0C8F,0C9A,0CA5,0CAC,0CB7,0CC2,0CCD,0CD8,0CE3,0CEE,
                      0D1D,0D2B,0D34,0D4E,0D57,0D72,0D7E,0D85,0D96,0DA0,
                      0DAA,0DB9,0DC0,0DCA,0DD3,0DEE,0DF8,0E05,0E16,0E24,
                      0F2D,0E3C,0E4A,0E5A,0E74,0E7D,0E87,0E94,0E9D,0EA9,
                      0EB4,0EBD,0EC9,0ED5,0EFB,0F01,0F0B,0F15,0F1F,0F29,
                      0F34,0F3E,0F46,0F4F,0F58,0F62,0F8D,0F90,0F93,0F9D,
                      0F9F,0FA2,0FA3
F002   0F9C   0F8F
F003   0FFC   0D3B,0F88,0FAD,0FC0,0FDF
F004   0FED   029A,02AA
F005   0FDE   02E0,02EB,02F6,0301,030F,0320,032A,0334,033F,034C,
               0357,0362,037B,0393,0399,03A6,03BA,03D3,03F1,040E,
               0437,0457,0475,0494,04B9,04DE,04DF,051D,053F,0552,
               055E,0596,0593,05A9,05BF,05D0,05DB,05F2,05FD,061A,
               0627,062E,063B,0642,0651,065B,0664,0690,0697,06A5,
               06AC,06B6,06BE,06C8,06D0,06DA,06E2,06EC,06F4,06FF,
               0707,071E,0732,0744,075D,0776,0790,07A5,07AE,07BA,
               07C7,07D4,07E1,07EE,07FB,0809,0817,0834,0841,084E,
               085B,0869,0877,08B5,08A4,08BC,08D4,08E0,08FE,0911,
               0925,0939,0951,095B,0972,0979,098A,0991,05A1,09A8,
               09B9,09C0,09D1,09DB,09F5,0A01,0A0D,0A19,0A25,0A34,
               0A45,0A5C,0A73,0A8A,0AA5,0AAC,0ADD,0AE4,0B0A,0B11,
               0B34,0B3B,0B5E,0B65,0B7A,0BAC,0BB3,0BC8,0BDC,0BF0,
               0C13,0C27,0C3A,0C4D,0C7D,0CF4,0CAB,0CAF,0CBA,0CC5,
               0CD0,0CD8,0CE6,0CF1,0D20,0D2B,0D37,0D67,0D75,0DBA,
               0D99,0DA3,0DAD,0DC3,0DCD,0DD6,0CE01,0E08,0E30,0E4D,
               0E5D,0E6B,0E8A,0EAC,0ECC,0ED8,0F04,0F0E,0F18,0F22,
               0F2C,0F37,0F51,0F5A,0F64,0FE4,0FE7
F007   0FF4   029C,02AC
F008   0FCF   0FC4,0FDD
F0C9   0FD1   0FC7
F902   02CA   02AE,02C1
F903   02CB   0297,02A7,02B7
F904   02CC   02CC
F911   02CD   0282,0286
F912   02CE   0283,0285,02CD
F913   02CF   0284
F915   02D0   0280,02B3
F916   02D1   028C
F917   02D2   02AF,02C2,02CA
F918   02D3   0289,028D
F919   02D4   0296
F920   02D5   02A6,02B8
F922   02D6   029E,02BB
F923   02DB   029F,02A0,02A3,02BC
G0C1   0144   0141
G0C2   0147   0145
G080   0130   012E
G081   0133   0130
G082   0138   0133
G083   013A   013B
G084   013B   013B
G14A   0181   017F
G14B   0185   0183
G14C   0189   0187
G14D   018D   018B
G14E   0191   018F
G14F   0195   0193
G140   015A   0158
G141   015D   015B
G142   0161   015F
G143   0165   0163
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PROCESSOR-CONTROLLER FUNCTION TEST

G144	0169	0167
G145	0160	0168
G146	0171	016F
G147	0175	0173
G148	0179	0177
G149	0170	017B
G150	0199	0197
G18A	01D0	01CE
G18B	01D4	0102
G18C	0108	0106
G18D	01DC	010A
G18E	01E0	010E
G18F	01E4	01E2
G181	01AC	01AA
G182	0180	01AE
G183	0184	0182
G184	0188	0186
G185	018C	018A
G186	01C0	018E
G187	01C4	01C2
G188	01C8	01C6
G189	01CC	01CA
C2CC	033F	033A
G2C0	0320	0318
G2C4	032A	0325
G2C8	0334	032F
G20A	0250	0259
G20B	0267	0265
G20C	026B	026F
G20D	0262	0260
G20D	0231	0220
G201	0236	0232
G202	023A	0236
G203	023E	023A
G204	0242	0240
G205	0247	0243
G206	024F	0248
G207	0254	0252
G208	024B	0247
G209	0258	0256
G280	02E0	0208
G281	02E8	02E6
G282	02F6	02F1
G283	0301	02FC
G284	030F	030A
G3C0	03E7	03E2
G3C2	03F1	03EC
G3C4	0405	0400
G3C6	040E	0409
G300	034C	0347
G302	0357	0352
G304	0362	0350
G340	0371	036C
G342	0376	0376
G38A	038A	0385
G38C	03C9	03C4
G38E	03D3	03CE
G380	0389	0384
G382	0393	038E
G384	0390	0398
G386	03A6	03A1
G388	0380	03AB
G4CA	05A9	05A4
G4CC	0586	0581
G4CD	058F	058A
G4C0	056E	0569
G4C2	0580	057C
G4C4	0589	0585

G4C6	0593	058E
G4C8	05A0	0598
G40C	0446	0442
G40E	0457	0452
G400	042C	0427
G404	0424	041F
G406	0437	0432
G407	0443	0440
G408	044E	0449
G44A	0513	050E
G44C	0507	0504
G44D	050A	0506
G44E	0510	0518
G440	04D5	0400
G442	04C0	04C8
G443	040E	0409
G444	04F4	04EF
G446	04E8	04E5
G447	04E8	04E7
G448	04F0	04F8
G480	0552	0540
G482	055F	055A
G5CA	0790	078B
G5C0	0754	074F
G5C2	0750	075B
G5C4	076C	0767
G5C6	0776	0771
G5C8	0786	0781
G50A	0613	0602,060C
G50C	0623	061F
G50E	0638	0634
C500	0500	05CC
G502	0508	0507
G504	05E4	05E2
G505	05E7	05E3
G506	05EF	05ED
G507	05F2	05EE
G508	05FA	05F8
G54A	06CC	06C2
G54C	060E	0604
G54E	06F0	06E6
G54F	0703	06F8
G540	0678	0666,0677
G542	0684	067F
G544	0698	0689
G546	06A1	069D
G548	068A	0680
G58A	0744	073F
G580	0715	0710
G582	071E	0719
G584	0728	0723
G586	0732	072D
G588	073B	0736
G6C0	0979	0960
G6C2	0991	0985
G6C4	09A8	099C
G6C6	09C0	0984
G6C8	0908	09CC
G60A	07E1	07DC
G60C	07EE	07E9
G60E	07F8	07F6
G600	07A2	079F
G602	07A8	07A8
G604	07BA	0785
G606	07C7	07C2
G608	07D4	07CF
G64A	0877	0872
G64C	0885	0880

PROCESSOR-CONTROLLER FUNCTION TEST

G640	0820	0825
G641	0834	082F
G642	0841	083C
G644	084E	0849
G646	085B	0856
G648	0869	0864
G660	089A	0895
G661	08A4	089F
G662	0282	08AD
G663	088C	08B7
G664	08CA	08C5
G665	08D4	08CF
G670	08E4	08D8
G671	08DB	080F
G672	080D	08EA
G6AA	0925	0920
G68C	0930	0928
G63E	0939	0934
G680	08F2	08EF
G682	08FE	08F9
G684	0909	0904
G686	0911	090C
G68D	091C	0917
G7CA	0C3A	0C35
G7CC	0C44	0C3F
G7CE	0C40	0C48
G7CG	0C09	0C04
G7C2	0C13	0C0E
G7C4	0C10	0C18
G7C6	0C27	0C22
G7C8	0C31	0C2C
G7DA	0A8A	0A85
G70C	0A97	0A92
G70E	0AAC	0A9C
G700	0A52	0A40
G702	0A5C	0457
G704	0A69	0A64
G706	0A73	0A6E
G708	0A80	0A7B
G74A	0811	0803,0800
G74C	081E	0819
G74E	0828	0823
G740	0AC6	0AC1
G742	0AD1	0ACC
G744	0AE4	0AD6,0AE0
G746	0AF3	0AEE
G748	0AFC	0AF7
G74A	0B02	08C0
G74C	08DC	08D7
G75F	08E6	08E1
G780	0896	0891
G782	08A0	0898
G784	08B3	08A5,08AF
C766	08BE	08B9
G788	08C8	08C3
G60A	0CAF	0CA1
G80C	0C8A	0C85
G50E	0CC5	0CC0
G800	0C66	0C61
G802	0C71	0C6C
G804	0C84	0C76
G806	0C92	0C8D
G808	0C90	0C98
G84A	0DCA	0DC8
G840	0D75	0D70
G842	0D8D	0D83
G844	0D99	0D94
G846	0DAU	0D9E

PROCESSOR-CONTROLLER FUNCTION TEST

G848	0DAA	00A8
G849	00C3	008E
G88A	0E40	0E48
G888	0E6B	0E68
G88C	0E77	0E72
G88E	0E80	0E7B
G880	0DF1	00EC
G881	00FE	00EB
G882	00FB	00F6
G883	0E05	0E00
G884	0E19	0E14
G885	0E2A	0E11
G886	0E27	0E22
G887	0E30	0E2C
G888	0E3F	0E3A
G889	0E50	0E58
G900	02AE	02A1,02B5
G901	02A6	0295
G902	029E	02A5
G903	0288	02C0
G904	02C1	0289,0280,02C6
H4C2	0570	057A
H4C3	057A	0575
H4C4	0586	0583
H40A	04B0	04A8
H40D	04A8	04A3
H40E	0489	0484
H40D	046C	0467
H402	0463	045E
H404	0475	0470
H405	0482	047E
H406	0488	0486
H407	047F	047C
H408	0494	048F
H440	0536	0531
H443	052E	0529
H444	053F	053A
H50A	0606	0604
H508	0617	0615
H50C	0624	0621
H50E	0642	0636
H508	05FD	05F9
H54A	0600	06C4
H54C	06E2	06D6
H54E	06F4	06E8
H54F	0707	06FA
H540	066A	0668
H544	0680	0688
H546	06A9	06A0
H548	068E	06B2
H6C0	0976	0968
H6C2	098E	0980
H6C4	09A5	0998
H6C6	09B0	09AF
H6C8	09D5	09C7
H600	09F5	09F0
H602	0A01	09FC
H603	0A00	0A08
H605	0A19	0A14
H606	0A25	0A20
H6F0	0A34	0A2F
H6F1	0A42	0A3C,0A3D,0A3F,0A40
H6F2	0A45	0A41
H600	07A5	07A1
H602	07AE	07AA
H640	0822	0822,0824
H680	08F5	08F1
H74A	080E	0805

PROCESSOR-CONTROLLER FUNCTION TEST

H744	0AE1	0AD8
H780	0BF0	0BEB
H784	0BB0	0BA7
H80A	0CAC	0CA3
H804	0C81	0C78
H84A	0DCD	0DC9
H842	0D81	0D7C
H846	0DA3	0D9F
H848	0DAD	0DA9
H849	0DB2	0DB2,0DB6
H85A	0DD6	0DD2
J50A	060D	0605
J50C	062B	0622
J50E	063F	0637
J540	0671	0669
J544	0694	068C
J546	06AC	069F
J600	0809	0804
J602	0817	0812
J680	0945	0940
J682	0958	094A
J70E	0AA9	0AA0
J74A	087A	0B75
J740	0B3B	0B2D,0B37
J742	084B	0843
J744	0852	084D
J746	0865	0B57,0B61
J748	0B70	0B6B
J8AA	0F34	0F31,0F32
J8A0	0EFB	0EF6
J8A1	0F0E	0F0A
J8A2	0F0B	0F09
J8A3	0F1B	0F14
J8A4	0F15	0F13
J8A5	0F22	0F1E
J8A6	0F1F	0F1D
J8A7	0F2C	0F28
J8A8	0F29	0F27
J8A9	0F37	0F33
J8C0	0F40	0F3C
J8C1	0F4B	0F44
J8C2	0F51	0F4D
J8C3	0F5B	0F56
J8C4	0F5A	0F57
J8C5	0F62	0F5F,0F60
J8C6	0F64	0F61
J800	0CD0	0CCB
J802	0CDB	0CD6
J804	0CE6	0CE1
J806	0CF1	0CEC
J80B	0D20	CD1B
J809	0D2B	0D26
J810	0D37	0D33
J811	0D44	0D53,0D5C,0D63
J812	0D51	0D4C
J813	0D5A	0D55
J814	0D3B	0D66
J815	0D34	0D31
J816	0D5D	0D60
J88A	0ED5	0ED3
J8BB	0EDB	0ED4
J8B0	0E8A	0E85
J8B2	0E97	0E92
J884	0EA0	0E9B
J8B6	0EAC	0EA7
J887	0EB7	0EB3
J888	0EC0	0EBB
J889	0ECC	0EC7

PROCESSOR-CONTROLLER FUNCTION TEST

K50B	061A	0616
K50C	062E	0623
K640	0824	08BC
K682	0955	094C
K740	0B38	0B2F
K746	0862	0859
K849	0D8C	0DB7
N1C0	01F3	01EB
N1C1	01F4	01EE
N1D0	0211	01FB,01FC,01FF,0207
N1D1	0212	01F5,01F8,0208
N1D2	0213	0204,020D
N1E0	021E	0218,021A,021E
N1E1	021F	0214
N1F0	022A	022C
N1F1	022B	0224,0.26,022B
N1F2	022C	0220
N100	0143	014C,014F
N140	019F	0154
N180	01EA	01A0,01A4
N2C0	0343	0319,031A,0323,032E
N2C2	0344	0324,032D,0337,0338,0339
N200	026C	0231,025D
N201	026D	0258
N202	026E	0262
N203	026F	0267
N240	0271	0271,0275
N241	0273	0270,0274
N242	027C	027F
N243	027D	0278,027E
N280	0313	02D9
N281	0314	02E3,0304
N282	0315	02E5,0309
N283	0316	02EE
N284	0317	02F0,02F9
N285	0318	02FB
N3C0	0412	03DF
N3C1	0413	03DD
N3C2	0414	03F6
N3C3	0415	03F4
N3C4	0416	03E1
N3C5	0417	03EB
N3C6	041B	03FF
N300	0366	0345,0346,034F
N302	0367	0350,0351,035A,035B,035C
N340	037F	036B
N341	0380	036A,0375
N380	03D7	0381
N381	03D8	0383,038D
N382	03D9	0396
N383	03DA	03A9,038D
N384	03DB	03B4
N385	03DC	03CD
N4C0	05C3	0567,0568,0573,058C,0597,0599,05AD,05AF
N4C1	05C4	058D
N4C2	05C5	0598,05A3,05AE,0589
N4C3	05C6	059A
N4C4	05C7	0580
N400	048D	0419,041C,0430
N401	048E	0499
N402	048F	047A
N403	04C0	045C,0485
N404	04C1	0466
N405	04C2	043A,045A,047B,0497
N406	04C3	043D
N440	0543	04C4,0520
N441	0544	04C6,04E3,0502,0522
N442	0545	04E1,04EE

N443	0546	0500
N444	0547	0500
N445	0548	0517
N460	0563	0549,0557
N481	0564	054B,0555,0559
N482	0565	054A,054C,0556,055B
N5C1	0798	074C,0760,0770,077F
N5C3	079A	0763,0766,0770,0779,078A,0793
N5C5	079C	074D,074E,0761,0764,0765,077A
N5C6	079D	0757,0762,076F,077B,077E,0780,0794
N5C7	079E	077C,0789,0795
N500	065C	05C9,0601,0613,0633
N501	065D	0504
N502	065E	05DF
N503	065F	05F6,0646
N504	0660	061E
N505	0661	0649,064A
N506	0662	064B
N507	05EA	05E0
N540	070B	0664,06AF
N541	070C	0679,067B
N542	070D	0670,0687,06C1,06D3
N543	070E	069C
N581	0748	070F
N582	0749	0735
N583	074A	0721
N584	074B	0722,072C
N6CA	09E6	096C
N6CB	09E7	0984,0A13,0A10
N6CD	09E8	09B3,0A11,0A1F
N6CF	09EA	09C4,09CB
N6C0	09DC	0967,090C,09EF
N6C1	09DD	09D0,09EC,09F8,0A04,0A07
N6C2	09DE	09DE,09FB
N6C3	09DF	090F
N6C4	09E0	0965,0970,0995,0997,09AC,09C6,09E0,09E9
N6C5	09E1	09AE,09E1
N6C6	09E2	09E2
N6C7	09E3	09E3
N6C8	09E4	097F,09E4
N6C9	09E5	096A,0968,0982,0983,099A,099B,0981,0982,09C9,09CA
N6F0	0A20	0A2A
N6F1	0A3B	0A29,0A2E,0A3B
N6F2	0A3D	0A3A
N6F3	0A41	0A3E
N600	081B	07D8,07EB,07F5,0B11,081B
N601	081C	07B2,07B4,07BF,07C1,07CC,07CE,0709,07E6,07F3,0801,
		080F,081C
N602	081D	0803,0810
N603	081E	07BE,07CB,07D0,07F5,07F2,0800,080C
N604	081F	080E
N640	088B	0821,0B23,0820,0838,083A,083B,0845,0847,0848,0852,
		0854,0B55,085F,0861,0862,0860,086F,0870,087B,0B70,
		0B7E,0889
N642	089C	082E
N643	0880	085E,086C,087A,0B8B
N644	08DE	0820,0837,0844,0851,0863,0B71,087F
N660	08D8	0893,0894,0890,0B9E,0BAB,08AC,0BB5,0B86,08C3,08C4,
		08CD,08CE
N670	0BEB	0B0A
N680	095C	0BED,08FB,0902,0915,0916
N681	0950	08EE
N682	095E	0903
N683	095F	0929,092A
N684	0960	0933,0930,093E
N686	0961	0949
N687	0962	091F
N688	0963	093F,094B

N7C0	0C51	0C01
N7C1	0C52	0C02
N7C2	0C53	0C03
N7C3	0C54	0C3D
N7C4	0C55	0C16,0C17,0C28,0C30
N7C5	0C56	0C21
N7C6	0C57	0C2A,0C3E
N700	0A80	0A49,0A60,0A8E
N701	0A81	0A4A,0A63,0A78,0A84,0A9F
N702	0A82	0A4B,0A55,0A62,0A6C,0A79,0A83,0A90,0A9A,0A9E
N703	0A83	0A4C,0A61
N704	0A84	0A56,0A60
N705	0A85	0A77,0ABF,0A91
N706	0A86	0A9B
N707	0A87	0A7A
N74A	0B88	0B22
N74B	0B89	0B4C
N74C	0B8A	0B3F
N740	0B7E	0A80,0AD4,0AEC,0AFF,0B17,082B,0B41,0855
N742	0B80	0AB9,0ABF,0ACA,0AEA,0B15,0B16,0B18,0B40,0B42
N744	0B82	0ABB
N746	0B84	0AE8,0B68
N747	0B85	0B69,0B6A
N748	0B86	0B01,0B2C,0B56,0B74
N78A	0BFE	0BC8
N780	0C00	0B06
N780	0BF4	0B8F,0BA3
N782	0BF6	0B8D,0BB7,080F
N784	0BF8	088E
N785	0BF9	0BC2,0BEA
N786	0BFA	0B90,0B9A,0BB8,0BCC
N787	0BFB	08F0
N768	08FC	0BA4
N8A0	0F68	0EF5,0F07,0F11,0F18,0F26
N8A1	0F69	0F0B,0F2F,0F30
N8A2	0F6A	0EF4,0EFE,0F1C
N8A3	0F68	0F12
N8A4	0F6C	0F25
N8C1	0F80	0F76
N8C2	0FB1	0298,02AB
N8C3	0F82	0F77,0F80
N8C5	0F6E	0F38
N8C6	0F70	0F3A,0F43,0F4C
N8C7	0F72	0F54,0F50,0F5E
N8C8	0F74	0F55
N80A	0CFE	0CC9
N80C	0D00	0C04
N80E	0002	0C64,0CDF
N80F	0003	0025
N800	0CF5	0C50,0C74,0C8A,0CA0
N802	0CF6	0C59
N804	0CF8	0CB7
N806	0CFA	0C83
N807	0CF8	0CBF,0CE0,0CEB,005E
N808	0CFC	0C8E,0CCA
N810	0004	0CEA
N811	0DD5	0C6A
N812	0006	0C58,0C5F,0C05
N813	0007	0C88,0CBB
N816	0008	0C96
N817	0009	001A
N818	000A	0019
N819	000C	0024
N820	000E	0030
N821	000F	0043,0044,0045,0049,004A,0050,005F
N822	0013	0042,0062
N823	0014	002F
N824	0016	0047

PROCESSOR-CONTROLLER FUNCTION TEST


```
NR4A    000A    00C6
N840    0DDC    0060,006E,0091,0092,0C85,0C8C
N841    0D00    0D6F,0093,00B0
N842    0DDE    0079,0081,0089
N843    00E0    0088
N844    00E1    00E2
N845    00E2    0078,0D78,0083
N846    00E3    0082
N85A    000B    0000
N86A    0EE6    0E8F,0EAF,0E00
N888    0EE7    0E56
N88C    0EE8    0E6E
N860    0EE9    0E80
N88E    0EEA    0E20,0EA5
N88F    0FEB    0E66
N880    0E0C    0DE0,00F4,0E1C,0E1E,0E42,0E44,0E83,0E84,0EA3,0EA4,
                0EC3,0EC5
N862    0EDE    0DE5,0E63
N884    0EE0    0E00,0E53,0CC6
N885    0EE1    0E33,0E46
N886    0EE2    0E12,0E35,0E38,0E91,0EBA
N887    0EE3    0E08
N888    0EE4    0E70
RST1    0FF7    0F87
RST2    0FF8    0F8A,0F8D
S501    0655    0648
S503    0658    064C
U00A    0F80    0F09
U00B    0F81    0F91,0FA0,0FC5,0FD6,0F0A
U00X    0FF5    0F84,0F86,0FC8,0FCD
U00D    0FE9    0F85,0F9A
U001    0FEA    0F87,0F98
U003    0FAF    0FA1
U004    0FEE
U006    0FEF    0F92,0FC9
U00B    0FF2
U009    0FF3
V1AC    027A    027C
V154    0241    023E
V168    024E    0248
V170    0253    0250
V174    0257    0254
V180    0261    025E
V184    0266    0263
W8C0    0F76    0EF2,0F67
W8C4    0F70    0F7A
X000    0120    3000,0FFA
X001    0286    3001,0281
X003    02C7    3002,02C3
X007    0F7C    3003
Z000    0FF0    003D,0F89,0F94,0FA8,0FC1,0F01,0FE0,0FEC
Z020    0F7F    0F78
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```
                           ABS
       3001                ORG   /3001                              88500020
                     *                                              88500030
                     *                                              88500040
                     *           ** PROGRAM WAITS **                88500050
                     *                                              88500060
       3001 0 013D    *     DC   WT1&1      WAIT 1                   88500070
                     *                                              88500080
                     *                                              88500090
                     *           NORMAL WAIT AFTER PROGRAM          88500100
                     *           LOAD.BIT SWITCH 8 OFF TO           88500110
                     *           RUN PROGRAM.BIT SWITCH 8           88500120
                     *           ON TO SELECT SCOPING RTN.          88500130
                     *           PUSH START TO EXECUTE              88500140
                     *                                              88500150
                     *                NOTE                          88500160
                     *                                              88500170
                     *           INSERT 3 JUMPERS AS PER            88500180
                     *           SECTION 3.2 A.SET DISPLAY          88500190
                     *           ADDRESS REGISTER SWITCH TO         88500200
                     *           DISPLAY CAR BEING TESTED.          88500210
       3002 0 0146    *     DC   WT2&1      WAIT 2                   88500220
                     *                                              88500230
                     *                                              88500240
                     *           OBSERVE CAR LAMPS. CAR             88500250
                     *           SHOULD BE 0000. PUSH START         88500260
       3003 0 014A    *     DC   WT3&1      WAIT 3                   88500270
                     *                                              88500280
                     *           OBSERVE CAR LAMPS. CAR             88500290
                     *           SHOULD BE 7FFF. PUSH START         88500300
                     *                                              88500310
       3004 0 0153    *     DC   WT4&1      WAIT 4                   88500320
                     *                                              88500330
                     *           THIS WAIT WILL OCCUR 15            88500340
                     *           TIMES TO ALLOW THE OPER.           88500350
                     *           TO CHECK A 1 BIT RIPPLE            88500360
                     *           THROUGH THE CAR. THE CAR           88500370
                     *           SHOULD BE THE SAME AS THE          88500380
                     *           A REG AT EACH WAIT. PUSH           88500390
                     *           START .                            88500400
       3005 0 0169    *     DC   WT5&1      WAIT 5                   88500410
                     *                                              88500420
                     *           THIS WAIT WILL OCCUR 16            88500430
                     *           TIMES.AT EACH WAIT THE CAR         88500440
                     *           CONTENTS SHOULD BE THE             88500450
                     *           SAME AS THE A REG. EACH            88500460
                     *           WAIT OCCURS AFTER THE CAR          88500470
                     *           IS LOADED WITH 1 OF 16             88500480
                     *           STARTING ADDRESSES AND             88500490
                     *           STEPPED 50 TIMES. PUSH             88500500
                     *           START AFTER EACH WAIT.             88500510
                     *                                              88500520
       3006 0 0178    *     DC   WT6&1      WAIT 6                   88500530
                     *                                              88500540
                     *           OBSERVE CAR LAMPS. CAR             88500550
                     *           SHOULD BE 7FFF. THIS WAIT          88500560
                     *           OCCURS AFTER CAR IS LOADED         88500570
                     *           TO 0000 AND STEPPED 7FFF           88500580
                     *           TIMES.PUSH START TO RETURN         88500590
                     *           TO WAIT 1. THIS IS THE END         88500600
                     *           OF PROGRAM WAIT.                   88500610
                     *                                              88500620
       3007 0 0180    *     DC   WT7&1      WAIT 7                   88500630
                     *                                              88500640
                     *           SCOPE ROUTINE WAIT. ENTER          88500650
                     *           DESIRED STARTING ADDRESS           88500660
                     *           IN DATA ENTRY SWITCHES.            88500670
                     *           PUSH START TO CONTINUE.            88500680
                                                                    88500690
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                     *                   .  .                       88500700
       3008 0 01B4    *     DC   WT8&1      WAIT 8                   88500710
                     *                                              88500720
                     *           SCOPE ROUTINE WAIT. ENTER          88500730
                     *           DESIRED NUMBER OF CAR              88500740
                     *           STEPS IN DATA ENTRY SWITS.         88500750
                     *           PUSH START TO CONTINUE.            88500760
                     *                                              88500770
       3009 0 01C4    *     DC   WT9&1      WAIT 9                   88500780
                     *                                              88500790
                     *           SCOPE ROUTINE WAIT.BIT SW          88500800
                     *           4 OPTION SELECTED. SINGLE          88500810
                     *           STEP CAR WITH START BUTTON         88500820
                     *                                              88500830
       300A 0 01ED    *     DC   WTA&1      WAIT A                   88500840
                     *                                              88500850
                     *           SCOPE ROUTINE WAIT.BIT SW          88500860
                     *           3 OPTION SELECTED. DESIRED         88500870
                     *           NUMBER OF CAR STEPS HAVE           88500880
                     *           BEEN ISSUED.CAR SHOULD BE          88500890
                     *           THE SAME AS THE A REG.             88500900
                     *           PUSH START TO CONTINUE             88500910
                     *                                              88500920
       300B 0 022B    *     DC   WTB&1      WAIT B                   88500930
                     *                                              88500940
                     *           AN INTERNAL INTERRUPT              88500950
                     *           OCCURED.THE ILSW IS IN THE         88500960
                     *           A REG.PUSH START TO CONTIN         88500970
                     *           UE FROM POINT OF INTERRUPT         88500980
                     *                                              88500990
       300C 0 01B8    *     DC   WTC&1      WAIT C                   88501000
                     *                                              88501010
                     *           SCOPE ROUTINE WAIT. ENTER          88501020
                     *           CONTROL OPTIONS IN DATA            88501030
                     *           ENTRY SWITCHES ACCORDING           88501040
                     *           TO TABLE 1 SEC. 3.                 88501050
                     *           PUSH START TO CONTINUE             88501060
                     *                                              88501070
       012C                ORG   300                                88501080
                     *                                              88501090
                     *           *********************              88501100
                     *           *CHANNEL ADDRESS REG*              88501110
                     *           *    CHECK PROGRAM   *             88501120
                     *           *                    *             88501130
                     *           *     ** CARCK **    *             88501140
                     *           *********************              88501150
                     *                                              88501160
                     *           THIS PROGRAM IS TO BE USED         88501170
                     *           IN CONJUNCTION WITH THE            88501180
                     *           CYCLE STEAL REQUEST TEST           88501190
                     *           AND THE CYCLE STEAL ACKNOW         88501200
                     *           LEDGE TEST FEATURE OF THE          88501210
                     *           1800 SYSTEM DATA CHANNELS          88501220
                     *                                              88501230
       012C 0 B500         DC   /B500            PID                88501240
       012D 0 631B   CARCK LDX   3 27            LOAD INTERRUPT     88501250
       012E 0 C04A         LD    CONST          *ADDRESS WITH TRAP  88501260
       012F 0 D700 0007    STO  L3 7            *ROUTINE ADDRESS    88501270
       0131 0 73FF         MDX   3 -1                               88501280
       0132 0 70FC         MDX    *-4                               88501290
       0133 0 6700 0228    LDX  L3 ERROR         SET INTERNAL INTRP 88501300
       0135 0 6F00 0008    STX  L3 8            *ADDRESS            88501310
                     *                                              88501320
       0137 0 C868         LDD   RESRT           SET RESTART INSTRN 88501330
       0138 0 DC00 0000    STD  L 0                                 88501340
                     *                                              88501350
       013A 0 0867         XIO   UMSK0           UNMASK INTERRUPT   88501360
       013B 0 0868         XIO   UMSK1          *LEVELS             88501370
```

I8M MAINTENANCE DIAGNDSTIC PRCGRAM FDR THE 1800 SYSTEM
CAR EXERCISER

PART NO. 2196475
PAGE   2

I8M MAINTENANCE DIAGNOSTIC PRDGRAM FOR THE 1800 SYSTEM
CAR EXERCISER

PART NO. 2196475
PAGF   2A

```
                         *                                               88501380
013C 0 3001      WT1  WAIT   1       SET 8II SW 8 TO                      88501390
                         *                *SELECT MANUAL MDDE             88501400
                         *                                               88501410
013D 0 086C           X10    8SW     GO TO MANUAL RDUTINE                 88501420
013E 0 C03E           LD     BSW1    *IF SELECTED                         88501430
013F 0 1008           SLA    8                                           88501440
0140 0 4C28 01AE      BSC  L CARMN,&Z                                    88501450
                         *                                               88501460
0142 0 C04B           LD     ADDRS&16  LOAD CAR                          88501470
0143 0 D062           STD    LOAD                                        88501480
0144 0 0861           XID    LOAD                                        88501490
                         *                                               88501500
0145 0 3002      WT2  WAIT   2       CAR SHDULD BE 0000                   88501510
                         *                                               88501520
0146 0 C038           LD     ADORS&1   LOAD CAR                          88501530
0147 0 D05E           STD    LDAD                                        88501540
0148 0 085D           XID    LOAD                                        88501550
                         *                                               88501560
0149 0 3003      WT3  WAIT   3       CAR SHOULD BE 7FFF                   88501570
                         *                                               88501580
                         *             **RIPPLE ONE BIT THROUGH**        88501590
                         *             **ALL CAR BIT POSITIONS **        88501600
                         *                                               88501610
014A 0 6301           LDX    3 1     SET UP CHECK STORAGF                 88501620
014B 0 6830           STX    3 RIPL                                      88501630
014C 0 6310           LDX    3 16                                        88501640
                         *                                               88501650
014D 0 C700 018E CAR1 LD   L3 RIPPL-1  GFT BIT LOAD ADDRESS              88501660
014F 0 D056           STO    LOAD    SET ADDRESS IN IDCC                  88501670
0150 0 0855           X10    LOAD    LOAD CAR                            88501680
0151 0 C02A           LD     RIPL    LOAD A W1TH EXP ADRS                 88501690
                         *                                               88501700
0152 0 3004      WT4  WAIT   4       CAR SHOULD 8E THE                    88501710
                         *                *SAME AS A REG                  88501720
                         *                                               88501730
0153 0 1001           SLA    1       SFT CHECK STORAGE FOR                88501740
0154 0 D027           STD    RIPL    *NEXT 8IT POSITION                   88501750
0155 0 73FF           MDX    3 -1    SKIP WHEN ALL BIT                    88501760
0156 0 70F6           MDX    CAR1    *POSITIONS CHECKEO                   88501770
                         *                                               88501780
                         *             ** CHECK CAR INCREMENT **         88501790
                         *                                               88501800
0157 0 6110           LDX    1 16    ADDRESS INDEX                       88501810
0158 0 C500 017D CAR2 LO   L1 AODRS-1  SET STARTING ADDRESS              88501820
015A 0 D04B           STO    LDAD    *IN IOCC AND IN                      88501830
015B 0 801E           A      ONE     *COUNTER                            88501840
015C 0 001E           STO    COUNT                                       88501850
015D 0 6232           LDX    2 50    STFP INDEX                          88501860
015E 0 0847           XIO    LOAD    LOAD CAR                            88501870
                         *                                               88501880
015F 0 0848      CAR3 XIO    STEP    STEP CAR                            88501890
0160 0 7401 017B      MDX  L COUNT,1 STEP COUNTER                        88501900
0162 0 1000           NDP                                                88501910
0163 0 72FF           MDX    2 -1    SKIP 1F 50 STFPS                     88501920
0164 0 70FA           MDX    CAR3                                        88501930
0165 0 C015           LO     CDUNT                                       88501940
0166 0 1000           NDP    0       ELIMINATE 8IT PDS.                   88501950
0167 0 1000           NDP    0       *0 FROM CK WORO                      88501960
                         *                                               88501970
0168 0 3005      WT5  WAIT   5       CAR SHOULD BE THE                    88501980
                         *                *SAME AS A REG                  88501990
                         *                                               88502000
0169 0 71FF           MDX    1 -1    SKIP 1F ALL ADDRESS                  88502010
016A 0 70ED           MDX    CAR2    *USED                               88502020
                         *                                               88502030
                         *             **CHECK INCREMENT FROM**          88502040
                         *             **ZERO TO 7FFF        **          88502050
```

```
                         *                                               88502060
016B 0 1010           SLA    16                                         88502070
016C 0 D039           STC    LOAD                                        88502080
016D 0 C011           LD     ADDRS&1   SET UP STEP CDUNTER               88502090
016E 0 D00C           STO    CDUNT                                       88502100
016F 0 0836           X1D    LOAD    LOAD CAR                            88502110
                         *                                               88502120
0170 0 0837      CAR4 X10    STEP    STEP CAR                            88502130
0171 0 74FF 017B      MDX  L CDUNT,-1  STEP COUNTFR -1                   88502140
0173 0 1000           NDP                                                88502150
0174 0 C006           LD     COUNT                                       88502160
0175 0 4820           BSC    Z       SKIP IF ALL STEPS                   88502170
0176 0 70F9           MDX    CAR4                                        88502180
                         *                                               88502190
0177 0 3006      WT6  WAIT   6       CAR SHOULD 8E 7FFF                   88502200
                         *                                               88502210
0178 0 7084           MDX    CARCK   REPEAT CHECK                        88502220
                         *                                               88502230
                         *             ** PROGRAM CONSTANTS **           88502240
                         *                                               88502250
0179 0 01F6  CONST DC     SVINT    INTERRUPT ADDRFSS                     88502260
017A 0 0001  ONE   DC     1        CONSTANT ONE                         88502270
017B 0 0000  CDUNT DC     0        STEP COUNTER                          88502280
017C 0 0000  R1PL  DC     0        RIPPLE CHECK WORD                    88502290
017D 0 0000  BSW1  DC     0        BIT SWITCH READ 1N                   88502300
017E 0 FFFF  ADDRS DC     /FFFF    TABLE OF STARTING                    88502310
017F 0 7FFE        DC     /7FFE    *AODRESSES
0180 0 7FEF        DC     /7FEF                                          88502320
0181 0 7F0E        DC     /7F0E                                          88502330
0182 0 7EFF        DC     /7EFF                                          88502340
0183 0 70FE        OC     /70FE                                          88502350
0184 0 70EF        DC     /70EF                                          88502360
0185 0 700E        DC     /700E                                          88502370
0186 0 6FFF        DC     /6FFF                                          88502380
0187 0 0FFF        DC     /0FFE                                          88502390
0188 0 0FEF        OC     /0FEF                                          88502400
0189 0 0F0E        DC     /0F0E                                          88502410
018A 0 0EFF        DC     /0EFF                                          88502420
018B 0 00FF        OC     /00FE                                          88502430
018C 0 00EF        DC     /00EF                                          88502440
018D 0 000E        OC     /000E                                          88502450
01BE 0 FFFF        DC     /FFFF                                          88502455
01BF 0 7FFF  RIPPL DC     /7FFF    RIPPLE TEST LOAD                      88502460
0190 0 3FFF        DC     /3FFF    *AODRESSES                            88502470
0191 0 1FFF        DC     /1FFF                                          88502480
0192 0 0FFF        DC     /0FFF                                          88502490
0193 0 07FF        OC     /07FF                                          88502500
0194 0 03FF        OC     /03FF                                          88502510
0195 0 01FF        DC     /01FF                                          88502520
0196 0 00FF        DC     /00FF                                          88502530
0197 0 007F        OC     /007F                                          88502540
0198 0 003F        DC     /003F                                          88502550
0199 0 001F        DC     /001F                                          88502560
019A 0 000F        DC     /000F                                          88502570
019B 0 0007        DC     /0007                                          88502580
019C 0 0003        DC     /0003                                          88502590
019D 0 0001        DC     /0001                                          88502600
019E 0 0000        OC     /0000                                          88502610
01A0   0000  RESRT BSS  E 0                                              88502620
01A0 0 4C00  RESRT DC     /4C00    RESTART INSTRUCTION                   88502630
01A1 0 012D        DC     CARCK                                          88502640
01A2 0 0000  UMSKO DC     /0000    UNMASK INTERRUPTS                     88502650
01A3 0 0480        OC     /0480    *IOCC                                 88502660
01A4 0 0000  UMSK1 DC     /0000                                          88502670
01A5 0 0481        DC     /0481                                          88502680
01A6 0 0000  LOAO  OC     0        LOAD CAR IOCC                         88502690
01A7 0 05A0        DC     /05A0                                          88502700
01A8 0 0000  STEP  DC     0        INCREMENT CAR IOCC                    88502710
```

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```
01A9 0 01A0              DC      /01A0                               88502720
01AA 0 017D      BSW     DC      BSW1    READ BIT SWITCH IOCC        88502730
01AB 0 0240              DC      /0240                               88502740
01AC 0 0000      SNSW    DC      /0300   READ SNS SWITCH IOCC        88502750
01A0 0 0760              DC      /0760                               88502760
                  *                                                  88502770
                  *              **************************          88502780
                  *              MANUAL AND SCOPE ROUTINE            88502790
                  *              **************************          88502800
                  *                                                  88502810
01AE 0 1000      CARMN   NOP                                         88502820
01AF 0 3007      WT7     WAIT    7       ENTER STARTING ADDRS        88502830
                  *                                                  88502840
01B0 0 08F9              XIO     BSW     READ IN ADDRESS AND         88502850
01B1 0 C0CB              LD      BSW1    *SAVE                       88502860
01B2 0 D040              STO     MNAO                                88502870
                  *                                                  88502880
01B3 0 3008      WT8     WAIT    8       ENTER NUMBER OF CNTS        88502890
01B4 0 08F5              XIO     BSW                                 88502900
01B5 0 C0C7              LD      BSW1    READ IN NUMBER OF           88502910
01B6 0 D03D              STD     MNCT    *COUNTS AND SAVE            88502920
                  *                                                  88502930
01B7 0 300C      WTC     WAIT    12      ENTER CNTRL OPTIONS         88502940
                  *                                                  88502950
01B8 0 C03A      CARM2   LD      MNAO    SET STARTING ADDRESS        88502960
01B9 0 00EC              STO     LOAO    *INTO IOCC AND INTO         88502970
01BA 0 D0C0              STD     COUNT   *COUNTER                    88502980
01BB 0 C038              LD      MNCT    SET NUMBER OF STEPS         88502990
01BC 0 D038              STO     MNCTR   *IN STEP COUNTER            88503000
01BD 0 08E8              XIO     LOAD    LOAD CAR                    88503010
                  *                                                  88503020
01BE 0 08EB      CARM3   XIO     BSW     READ BIT SWITCHES           88503030
01BF 0 C08D              LD      BSW1                                88503040
01C0 0 1004              SLA     4       SKIP IF BIT SW 4 ON         88503050
01C1 0 4810              BSC     -       SKIP IF BIT SW 4 ON         88503060
01C2 0 700F              MDX     CARM4                               88503070
                  *                                                  88503080
01C3 0 3009      WT9     WAIT    9       SINGLE STEP CAR WITH        88503090
                  *              *START BUTTON                       88503100
                  *                                                  88503110
01C4 0 C02F              LD      MNCT    IF NUMBER OF STEPS          88503120
01C5 0 4818              BSC     E-      *ENTERED IS ZERO            88503130
01C6 0 70F1              MDX     CARM2   *SS WILL LOAD CAR           88503140
01C7 0 08E0              XIO     STEP    STEP CAR                    88503150
01C8 0 7401 017B         MDX  L  CCUNT,1 STEP COUNTER               88503160
01CA 0 1000              NOP                                         88503170
01CB 0 74FF 01F5         MDX  L  MNCTR,-1 DECREMENT STEP CNTR       88503180
01CD 0 1000              NOP                                         88503190
01CE 0 C026              LD      MNCTR                               88503200
01CF 0 4820              BSC     Z       SKIP IF COUNTER ZERO        88503210
01D0 0 70ED              MDX     CARM3   CONTINUE STEP               88503220
01D1 0 70E6              MDX     CARM2   RELOAD CAR                  88503230
                  *                                                  88503240
                  *                                                  88503250
                  *              ** NOT BIT SWITCH 4 **              88503260
                  *                                                  88503270
01D2 0 C021      CARM4   LD      MNCT    CHECK NUMBER OF STEP        88503280
01D3 0 4818              BSC     E-      *SKIP IF STEPS NOT 0        88503290
01D4 0 700A              MDX     CARM6                               88503300
01D5 0 08D2      CARM5   XIO     STEP    STEP CAR                    88503310
01D6 0 7401 017B         MDX  L  CCUNT,1 STEP COUNTER               88503320
01D8 0 1000              NOP                                         88503330
01D9 0 74FF 01F5         MDX  L  MNCTR,-1 DECREMENT STEP CNTR       88503340
01DB 0 1000              NOP                                         88503350
01DC 0 C018              LD      MNCTR                               88503360
01DD 0 4820              BSC     Z       SKIP IF COUNTER ZERO        88503370
01DE 0 70F6              MDX     CARM5                               88503380
                  *                                                  88503390
                  *              **COUNT CMPLT CK BIT SW2**
```

```
                  *                                                  88503400
01DF 0 08CA      CARM6   XIO     BSW     READ BIT SWITCHES           88503410
01E0 0 C09C              LD      BSW1                                88503420
01E1 0 1002              SLA     2                                   88503430
01E2 0 4810              BSC     -       SKIP IF BIT SW 2 ON         88503440
01E3 0 7001              MDX     *E1                                 88503450
01E4 0 70C9              MDX     CARMN   CHANGE PARAMETERS           88503460
01E5 0 1001              SLA     1                                   88503470
01E6 0 4810              BSC     -       SKIP IF BIT SW 3 ON         88503480
01E7 0 70D0              MDX     CARM2   LOOP ROUTINE                88503490
01E8 0 C092              LD      COUNT                               88503500
01E9 0 8090              A       ONE                                 88503510
01EA 0 1001              SLA     1       ELIMINATE BIT POS.          88503520
01EB 0 1801              SRA     1       *0 FROM CK WORD             88503530
                  *                                                  88503540
01EC 0 300A      WTA     WAIT    10      CAR SHOULD BE SAME          88503550
                  *              *AS A REG                           88503560
                  *                                                  88503570
01ED 0 08BC              XIO     BSW     READ BIT SWITCHES           88503580
01EE 0 C08E              LD      BSW1                                88503590
01EF 0 1002              SLA     2                                   88503600
01F0 0 4810              BSC     -       SKIP IF BIT SW 2 ON         88503610
01F1 0 70C6              MDX     CARM2   RERUN PRESENT SETUP         88503620
01F2 0 70BB              MDX     CARMN   CHANGE PARAMETERS           88503630
                  *                                                  88503640
01F3 0 0000      MNAO    DC      0       ADDRESS ENTRY               88503650
01F4 0 0000      MNCT    DC      0       NUMBER STEPS ENTRY          88503660
01F5 0 0000      MNCTR   DC      0       STEP COUNTER                88503670
                  *                                                  88503680
                  *              **********************              88503690
                  *              INTERRUPT TRAP ROUTINE              88503700
                  *              **********************              88503710
                  *                                                  88503720
01F6 0 0000      SVINT   DC      0                           IF      88503730
01F7 0 D02C              STO     SVIO    SAVE ACCUMULATOR            88503740
01F8 0 0820              XIO     ILSW    RESET ILSW                  88503750
01F9 0 7402 0223         MDX  L  SV7,2   SET PASS SWITCH            88503760
01FB 0 1010              SLA     16                                  88503770
01FC 0 D023              STO     SV4     CLEAR AREA CODE CNTR        88503780
01FD 0 C020              LD      SV2                                 88503790
01FE 0 D023              STD     SV6     SET IOCC IN USE SW          88503800
01FF 0 C01D      SVINO   LD      SV1                                 88503810
0200 0 D020              STO     SV5     SET MODIFIER COUNTER        88503820
0201 0 C01F      SVINI   LD      SV4     *                           88503830
0202 0 100B              SLA     11      *                           88503840
0203 0 E81D              OR      SV5     *BUILD IOCC                 88503850
0204 0 F81D              OR      SV6     *                           88503860
0205 0 D01F              STO     SVIO&1  *                           88503870
0206 0 081D              XIO     SVIO    SENSE/RESET DSW            88503880
0207 0 74FF 0221         MDX  L  SV5,-1                             88503890
0209 0 70F7              MDX     SVIN1   BRNCH IF NOT ALL MOD        88503900
020A 0 7401 0220         MDX  L  SV4,1   INCREMENT AREA CODE        88503910
020C 0 C013              LD      SV4                                 88503920
020D 0 900E              S       SV0     CHECK IF ALL AC USED        88503930
020E 0 4808              BSC     E       SKIP IF ALL AC USED         88503940
020F 0 70EF              MDX     SVINO   GO SENSE WITH NXT AC        88503950
0210 0 74FF 0223         MDX  L  SV7,-1  SKIP IF SECOND PASS        88503960
0212 0 7001              MDX     *E1                                 88503970
0213 0 7005              MDX     SVEXT-1                             88503980
0214 0 C00A              LD      SV3                                 88503990
0215 0 D00C              STO     SV6     SET IOCC FOR PI             88504000
0216 0 1010              SLA     16                                  88504010
0217 0 D008              STD     SV4     SET AC FOR NEXT PASS        88504020
0218 0 70E6              MDX     SVINO                               88504030
0219 0 C00A              LD      SVIO    RESTORE ACCUMULATOR         88504040
021A 0 4CC0 01F6  SVEXT  BDSC I  SVINT   EXIT               IX       88504050
                  *                                                  88504060
                  *              ** CONSTANTS **                     88504070
```

```
                      *                                              88504080
021C 0 001F    SV0  DC      /001F    NUMBER OF AREA CODES           88504090
0210 0 00FF    SV1  DC      /00FF    NUMBER OF MODIFIERS            88504100
021E 0 0701    SV2  DC      /0701    SENSE/RESET DSW                88504110
021F 0 0700    SV3  DC      /0700    SENSE/RESET PISW               88504120
0220 0 0000    SV4  DC      0        AREA CODE INDICATOR            88504130
0221 0 0000    SV5  DC      0        MODIFIER INDICATOR             88504140
0222 0 0000    SV6  DC      0        IOCC IN USE                    88504150
0223 0 0000    SV7  DC      0        PASS SWITCH                    88504160
0224   0000         BSS  F  0                                       88504170
0224 0 0000    SVIO DC      0        SENSE DSW/PISW IOCC            88504180
0225 0 0000         DC      0                                       88504190
0226 0 0000    ILSW DC      0        SENSE ILSW IOCC               88504200
0227 0 0300         DC      /0300                                   88504210
                  *                                                 88504220
                  *         ******************                      88504230
                  *         ERROR TRAP ROUTINE                      88504240
                  *         ******************                      88504250
                  *                                                 88504260
022B 0 0000    ERROR DC     0        ENTRY POINT          IE        88504270
0229 0 0BFC          XID  ILSW       SENSE ILSW                     88504280
022A 0 3008    WTB   WAIT  11        ILSW IN A REG                  88504290
022B 0 4CC0 0228     BDSC I ERROR    EXIT                 IX        88504300
                  *                                                 88504310
022E   012D          END  CARCK                                     88504320
     NO STATEMENTS FLAGGED IN THE ABOVE ASSEMBLY
```

```
ADDRS   017F  0142 0146 0158 016D
BSW     01AA  013D 01B0 0184 01BE 01DF 01ED
BSW1    017D  013E 01AA 0181 0185 01BF 01E0 01EE
CARCK   012D  0178 01A1 022E
CARMN   01AE  0140 01E4 01F2
CARM2   01B8  01C6 01D1 01E7 01F1
CARM3   01BE  01D0
CARM4   0102  01C2
CARM5   01D5  01DF
CARM6   010F  01D4
CAR1    014D  0156
CAR2    015B  016A
CAR3    015F  0164
CAR4    0170  0176
CONST   0179  012E
COUNT   017B  015C 0160 0165 016E 0171 0174 018A 01C8 01D6 01FB
ERROR   0228  0133 0228
ILSW    0226  01F8 0229
LOAD    01A6  0143 0144 0147 0148 014F 0150 015A 015F 016C 016F 01B9 01BD
MNAD    01F3  0182 0188
MNCT    01F4  01B6 01BB 01C4 01D2
MNCTR   01F5  01BC 01CE 01D9 01DC
ONF     017A  015B 01E9
RESRT   01A0  0137
RIPL    017C  0148 0151 0154
RIPPL   01BF  014D
SNSW    01AC
STFP    01A8  015F 0170 01C7 01D5
SVEXT   021A  0213
SVINT   01F6  0179 021A
SVINO   01FF  020F 0218
SVIN1   0201  0209
SVID    0224  01F7 0205 0206 0219
SV0     021C  020D
SV1     021D  01FF
SV2     021E  01FD
SV3     021F  0214
SV4     0220  01FC 0201 020A 020C 0217
SV5     0221  0200 0203 0207
SV6     0222  01FE 0204 0215
SV7     0223  01F9 0210
UMSK0   01A2  013A
UMSK1   01A4  013B
WTA     01FC  300A
WTB     022A  3008
WTC     01B7  300C
WT1     013C  3001
WT2     0145  3002
WT3     0149  3003
WT4     0152  3004
WT5     0168  3005
WT6     0177  3006
WT7     01AF  3007
WT8     01B3  3008
WT9     01C3  3009
END OF ASSEMBLY
```

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TABLE OF CONTENTS

1. PURPOSE

   THE CAR EXERCISER PROGRAM IS TO BE USED IN CONJUNCTION WITH THE
   CYCLE STEAL REQUEST TEST AND THE CYCLE STEAL ACKNOWLEDGE TEST
   FEATURES OF THE DATA CHANNEL. THE PROGRAM IS USED TO LOAD AND STEP
   THE CAR SELECTED FOR TEST. ALL BIT POSITIONS IN THE C.A.R. ARE
   TESTED.

2. PREREQUISITES

   2.1   PROGRAM PREREQUISITES

   THE BASIC DIAGNOSTIC LOADER IS REQUIRED TO LOAD THIS PROGRAM.

   2.2   EQUIPMENT PREREQUISITES

   THE FOLLOWING EQUIPMENT IS REQUIRED.

   A.   1800 PROCESSOR/CONTROLLER
   B.   1442 CARD READ/PUNCH OR 1054 PAPER TAPE READER.

3. USE PROCEDURE

   3.1   PROGRAM LOADING

   REFER TO BASIC DIAGNOSTIC LOADER DOCUMENTATION FOR PROGRAM LOADING
   PROCEDURES.

   3.2   PROGRAM OPERATION

   WITH PROGRAM STOPPED AT WAIT 1, B REG = 3001,

   A.   INSERT 3 JUMPERS AS FOLLOWS, TO ACTIVATE THE CYCLE STEAL
        REQUEST TEST AND CYCLE STEAL ACKNOWLEDGE TEST LEVELS.

   JUMPER 1 - B-B1G2D02 (CR221) TO B-B1G5D09 (CQ111)

   THIS JUMPER ACTIVATES THE SET CAR FUNCTION DURING AN INITIALIZE
   READ OR WRITE.

JUMPERS 2 AND 3 - REFER TO LOGIC PAGE CT971. INSTALL JUMPER 2
FROM CS REQUEST TEST SIGNAL TO CS REQUEST LEVEL TO BE TESTED.
INSTALL JUMPER 3 FROM CS ACKNOWLEDGE TEST TO CS ACKNOWLEDGE LEVEL TO BE TES
INSTALL JUMPER 3 FROM CS ACKNOWLEDGE TEST TO CS ACKNOWLEDGE LEVEL TO
BE TESTED.

NOTE - POINTS FOR CHANNEL 0 - 8 ARE ON THE 60 B - B1 BOARD AND
POINTS FOR CHANNEL 9 - 14 ARE ON THE 60 D - A1 BOARD.

   B.   SET 'DISPLAY ADDRESS REGISTER' SWITCH TO DISPLAY C.A.R. BEING
        TESTED.
   C.   TO RUN PROGRAM CONTROLLED MODE, SET DATA ENTRY SWITCHES TO 0000.
        DEPRESS START. PROCEED WITH PROGRAM ACCORDING TO WAIT
        INSTRUCTIONS 2 THROUGH 6.
   D.   TO RUN MANUAL CONTROLLED (SCOPING) MODE, SET DATA ENTRY SWITCH 8
        ON AND DEPRESS START. PROGRAM WILL COME TO WAIT 7. PROCEED WITH
        PROGRAM ACCORDING TO WAIT INSTRUCTIONS 7 THROUGH A.

TABLE 1
PROGRAM OPTIONS - DATA ENTRY SWITCHES

NOTE -- FUNCTIONS OF SWITCHES 2,3,4 ARE FOR SCOPING ROUTINES ONLY.

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****************************************************************************
*                                                                        *
* NOTE. TABLE 1 PROGRAM OPTIONS MAY BE ENTERED ONLY WHEN PROGRAM IS STOPPED AT *
*       WAIT 1.                                                           *
*                                                                        *
****************************************************************************
*                             *                                          *
*      DATA ENTRY SWITCHES    *          OPTION DESCRIPTION               *
**************************************                                    *
* 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 *                                *
****************************************************************************
*                                                                        *
*     . . .       0.....................RUN PROGRAM CONTROLLED MODE       *
*     . . .       1.....................RUN MANUAL CONTROLLED (SCOPING) MODE *
*     . . 1.............................SINGLE STEP C.A.R. WITH START      *
*     . .                               PUSHBUTTON                        *
*     . 1...............................STOP AFTER EACH PASS THROUGH SCOPE *
*     .                                 ROUTINE                           *
*     1.................................RETURN TO WAIT 7 TO CHANGE ADDRESS *
*                                       AND NUMBER OF STEPS               *
****************************************************************************
```

3.3   PROGRAM TERMINATION

   IF RUNNING PROGRAM CONTROLLED MODE, PROGRAM WILL EXECUTE ONCE AND
   STOP AT WAIT 6. DEPRESSING THE START PUSHBUTTON WILL RETURN THE
   PROGRAM TO WAIT 1, WHICH IS THE START OF THE PROGRAM.

   IF RUNNING MANUAL (SCOPE) CONTROLLED MODE, PROGRAM MAY BE
   TERMINATED BY DEPRESSING THE STOP PUSHBUTTON. DEPRESSING RESET AND
   START WILL RETURN THE PROGRAM TO WAIT 1.

IMPORTANT NOTE

   BEFORE RETURNING SYSTEM TO THE CUSTOMER, INSURE THAT THE 3 JUMPERS
   INSERTED AT WAIT 1, ARE REMOVED FROM THE CHANNEL.

3.4   RESTART PROCEDURE

   PRESS THE STOP, RESET AND START BUTTONS. THE PROGRAM SHOULD GO TO
   WAIT 1. IF THIS DOES NOT OCCUR, THE PROGRAM MUST BE RELOADED.

3.5   PROGRAM HALTS

    PROGRAM WAITS ARE USEO IN THIS PROGRAM, ANO ARE IOENTIFIEO BY
    REFERENCING THE B REG ANO 1 REG.

    A PROGRAM WAIT IS OF THE FORM,

        3DXX, (B REG).

    A DESCRIPTION OF THE INOIVIOUAL PROGRAM WAITS CAN BE FOUNO AT THE
    BEGINNING OF THE PROGRAM LISTING. A TYPICAL WAIT OESCRIPTION FOLLOWS.
    IT IS INCLUOEO TO SHOW THE FORMAT OF THE LISTING, AND IT IS NOT
    NECESSARILY A DESCRIPTION OF AN ACTUAL WAIT.

```
*****************************************************************************

30D1 0  01ED                  OC        WAIT1+1
                    *                              WAIT 1
                    *
                    *                    ONE OF THE METEREO I/O UNITS
                    *                    FAILED TO SEND A RESPONSE
                    *                    INTERRUPT TO THE PROGRAM.  INOEX
                    *                    REGISTER 1 WILL HAVE THE AOORESS
                    *                    OF THE IOCC.  THE AREA CODE WILL
                    *                    INDICATE THE I/O UNIT NOT REAOY.
                    *                    IF A 2401/02 ORIVE IS NOT REAOY,
                    *                    PROGRAM WILL NOT STOP AT WAIT 1.
                    *
*****************************************************************************
```

    B REG, (FIRST 4 OIGIT GROUP) CORRESPONOS TO B REG REAOING.

    1 REG, (SECOND 4 DIGIT GROUP) CORRESPONDS TO 1 REG REAOING.

4. PRINTOUTS

    THERE ARE NO PRINTOUTS ASSOCIATED WITH THE CAR EXERCISER PROGRAM.

5. COMMENTS

    ‹   THE CAR EXERCISER CONSISTS OF A PROGRAM CONTROL ROUTINE, AND A
    MANUAL (OPERATOR CONTROL) ROUTINE.

    THE PROGRAM CONTROL ROUTINE CONTAINS THE STARTING AODRESS ANO
    PREOEFINEO NUMBER OF STEPS USEO TO LOAO AND INCREMENT THE C.A.R.
    BEING TESTED.

    THE C.A.R. IS LOADED USING AN XIO INSTRUCTION WHOSE IOCC IS
    OODD D5AO. THE CAR WILL AUTOMATICALLY BE INCREMENTEO BY 1 EACH TIME
    IT IS LOAOED. THE INCREMENT BY 1 IS A HARDWARE FUNCTION. THE CAR IS
    STEPPED USING AN XIO INSTRUCTION WHOSE IOCC IS 000D D1AD. EACH XIO
    CAUSES THE CAR TO BE INCREMENTEO BY 1.

    WAITS 2 AND 3 ARE USED TO DISPLAY THE RESULTS OF LOAOING TESTS.
    THE C.A.R. IS FIRST LOAOEO TO 7FFF. THE AUTO INCREMENT SHOULO
    STEP IT TO DDDO. THIS RESULT IS DISPLAYEO AT WAIT 2. THE C.A.R.
    IS THEN LOADED TO 7FFE. THE AUTO INCREMENT SHOULO STEP IT TO 7FFF.
    THIS IS OISPLAYED AT WAIT 3.

    WAIT 4 IS USED TO OISPLAY THE RESULTS OF RIPPLING A 1 BIT THROUGH ALL
    CAR BIT POSITIONS. EXCEPT BIT D. EACH TIME THE WAIT OCCURS, THE A
    REG WILL CONTAIN THE VALUE THAT SHOULO APPEAR IN CAR.

    THE LOAO ADORESSES ARE AS FOLLOWS,

1.	0000	9.	DOFF
2.	D001	10.	01FF
3.	DDD3	11.	D3FF
4.	0007	12.	07FF
5.	000F	13.	0FFF
6.	001F	14.	1FFF
7.	003F	15.	3FFF
B.	D07F		

    WAIT 5 IS USED TO OISPLAY THE RESULTS OF THE C.A.R. INCREMENT TEST.
    THE C.A.R. IS LOAOED 16 TIMES WITH 16 DIFFERENT STARTING AODRESSES,
    AND AFTER EACH LOAO THE C.A.R. IS INCREMENTED 5D TIMES. EACH TIME
    THE WAIT OCCURS, THE A REG. WILL CONTAIN THE VALUE WHICH SHOULO
    APPEAR IN THE C.A.R.

    THE STARTING AODRESSES USED ARE AS FOLLOWS,

1.	7FFF	9.	6FFF
2.	DDOE	10.	70OE
3.	OOEF	11.	70EF
4.	ODFE	12.	70FE
5.	OEFF	13.	7EFF
6.	OFOE	14.	7FOE
7.	OFEF	15.	7FEF
8.	OFFE	16.	7FFE

    FOLLOWING THE INCREMENT TEST, THE CAR. IS LOADEO TO OODO ANO STEPPEO
    7FFE TIMES. AT WAIT 6, THE CAR SHOULD CONTAIN 7FFF.

    ANY ERRORS OBSERVEO BY THE OPERATOR CAN BE LOOPED BY SETTING THE
    STARTING AOORESS ANO NUMBER OF STEPS USEO BY THE AUTO ROUTINE INTO
    THE MANUAL ROUTINE, ANO RUNNING THE MANUAL ROUTINE WITH SENSE
    SWITCH O ON.

    THE MANUAL CONTROLLEO ROUTINE WILL LOAO THE C.A.R. WITH THE AODRESS
    ENTEREO BY THE OPERATOR AT WAIT 7. IT WILL THEN STEP THE C.A.R.
    THE NUMBER OF TIMES SPECIFIED BY THE OPERATOR AT WAIT B. CONTROL
    OF THE ROUTINE IS TRANSMITTED VIA THE DATA ENTRY SWITCHES. (SEE
    TABLE 1). IF THE NUMBER OF STEPS ENTEREO BY THE OPERATOR AT WAIT B
    IS ZERO, THEN THE PROGRAM WILL ISSUE CONTINUOUS LOAO C.A.R.
    INSTRUCTION ACCOROING TO THE DATA ENTRY SWITCH SETTING. IF NO
    CONTROL OPTIONS ARE ENTEREO, THE SCOPING ROUTINE WILL LOOP
    CONTINUOUSLY USING THE OATA ENTEREO AT WAITS 7 AND B AS INPUT
    PARAMETERS.

6. APPENOIX (NONE)

-- LAST PAGE --

```
                      ABS
      3001            ORG      /3001
                  *--------------------------------------------
                  *            PROGRAM WAIT SECTION
                  *
      3001 0 01F6     DC       WAIT1&1    WAIT 1
                  *
                  *            ONE OF THE METERED I/O UNITS
                  *            FAILED TO SEND A RESPONSE
                  *            INTERRUPT TO THE PROGRAM.  INDEX
                  *            REGISTER 1 WILL HAVE THE ADDRESS
                  *            OF THE IOCC.  THE AREA CODE WILL
                  *            INDICATE THE I/O UNIT NOT READY.
                  *            IF A 2401/02 DRIVE IS NOT READY,
                  *            PROGRAM WILL NOT STOP AT WAIT I.
                  *
      3002 0 0210     DC       WAIT2&5    WAIT 2
                  *
                  *            SET THE PC DATA ENTRY SWITCHES TO
                  *            INDICATE THE NUMBER OF 72 SECOND
                  *            DELAY LOOPS DESIRED.  PRESS THE
                  *            PC START BUTTON TO START THE
                  *            EXERCISE.
                  *
                  *
      3003 0 0230     DC       WAIT3&1    WAIT 3
                  *
                  *            END OF DELAY.  METERS SHOULD BE
                  *            READ AND THE ELAPSED TIME COMPUTED
                  *            %BY HAND<.  TO RUN THE TEST AGAIN,
                  *            SET THE PC DATA ENTRY SWITCHES
                  *            TO INDICATE THE NUMBER OF 72
                  *            SECOND DELAY LOOPS DESIRED AND
                  *            PRESS THE PC START BUTTON.
                  *
                  *
      3004 0 0200     DC       WAIT4&1    WAIT 4
                  *
                  *            DID NOT RECEIVE A PRINTER COMPLETE
                  *            INTERRUPT FROM THE 1443.
                  *            MAKE THE 1443 READY AND THEN PRESS
                  *            THE PC START BUTTON.
                  *
                  *--------------------------------------------
                  *
      0123          ORG      /0123
      0123 0 B600     DC       /B600
                  ****************************************
                  *            TO RESTART THE PROGRAM,
                  *            PRESS THE PC RESET BUTTON AND
                  *            START BUTTON.  THE PROGRAM
                  *            WILL START ALL METERS AGAIN
                  *            AND STOP AT @WAIT 2@.
                  ****************************************
      0124 0 012C     DC       LOAD
      012C          ORG      /012C
      012C 0 C400 02D0  LOAD LD   L  RSTR
      012E 0 D400 0000       STO  L  0
      0130 0 C400 02D1       LD   L  RSTR&1
      0132 0 D400 0001       STO  L  1
      0134 0 610D           LDX  1 13        XR1# NO OF EDITS
      0135 0 6203           LDX  2 /0003
      0136 0 6700 02A9       LDX  L3 CNFIG
                  *
                  ****************************************
                  *            TRANSFER THE EDIT CARD INFO
                  *            TO I/O CONFIGURATION
```

```
                  *            TABLE.  %CNFIG<
                  ****************************************
      0138 0 C200     XFER LD   2 0
      0139 0 D300          STO  3 0
      013A 0 7201          MDX  2 1
      013B 0 7301          MDX  3 1
      013C 0 71FF          MDX  1 -1
      013D 0 70FA          MDX    XFER
                  *
                  ****************************************
                  *            BUILD INTR LVL WORD AND STORE
                  *            IN INTERRUPT TABLE.  %ITBLE<
                  ****************************************
      013E 0 C400 02BB  RERUN LD  L  ITBLE     ADDR OF ITBLE
      0140 0 D400 02B7       STO  L  ITBL1
      0142 0 C400 02CB       LD   L  EDCT       SET EDIT COUNT
      0144 0 D400 02B6       STO  L  EDCT1     *TO 12.
      0146 0 6500 02B0       LDX  L1 IOCC
      014B 0 6600 02A9       LDX  L2 CNFIG
      014A 0 C200     BUILD LD   2 0
      014B 0 4B2B          BSC    &Z           IS THIS DEV ON SYS
      014C 0 702B          MDX    NODEV        DEV NOT ON SYSTEM
      014D 0 1B0B          SRA    B
      014E 0 4B1B          BSC    &-
      014F 0 7022          MDX    BIT0
      0150 0 D400 02BA       STO  L  WORD
      0152 0 67B0 02BA       LDX  I3 WORD
      0154 0 C400 02CB       LD   L  EASY       A REG # 000E
      0156 0 B400 02BA       CMP  L  WORD       IS INTR LVL LESS
      0158 0 7010          MDX    LES14        *THAN FOURTEEN
      0159 0 1000          NOP    0
      015A 0 73F2          MDX    3 -14
      015B 0 7005          MDX    ILWD1
      015C 0 C400 02BB       LD   L  EIGHT      INTR LVL # 14
      015E 0 EC00 02C9       OR   L  ONE
      0160 0 700D          MDX    STO1
      0161 0 C400 02BB  ILWD1 LD   L  EIGHT
      0163 0 1B01     SHRT2 SRA    1
      0164 0 73FF          MDX    3 -1
      0165 0 70FD          MDX    SHRT2
      0166 0 EC00 02C9       OR   L  ONE        BIT 15# 1 MEANS IL
      016B 0 7005          MDX    STO1        *IS GREATER THAN 13.
      0169 0 C400 02B8  LES14 LD   L  EIGHT
      016B 0 1B01     SHRT1 SRA    1
      016C 0 73FF          MDX    3 -1
      016D 0 70FD          MDX    SHRT1
      016E 0 D4B0 02B7  STO1 STO  I  ITBL1     STO IL WD IN TABLE
      0170 0 4C00 017F       BSC  L  ILSWD      GO TO BUILD ILSW WD
      0172 0 C400 02BB  BITO LD   L  EIGHT      AO# 1
      0174 0 70F9          MDX    STO1
      0175 0 D500 0000  NODEV STO  L1 0
      0177 0 7102          MDX    1 2
      017B 0 7402 02B7       MDX  L  ITBL1,2
      017A 0 7202          MDX    2 2
      017B 0 74FE 02B6       MDX  L  EDCT1,-2
      017D 0 70CC          MDX    BUILD
      017E 0 7023          MDX    ADDR
                  *
                  ****************************************
                  *            BUILD ILSW WORD AND STORE IN
                  *            INTERRUPT TABLE.  %ITBLE<
                  ****************************************
      017F 0 7401 02B7  ILSWD MDX  L  ITBL1,1
      01B1 0 C200          LD   2 0
      01B2 0 100B          SLA    B
      01B3 0 1B0C          SRA    12
      01B4 0 4B18          BSC    &-
      01B5 0 700F          MDX    BZERO
```

```
0186 0 D400 02BA        STC  L  WORD
0188 0 6780 02BA        LDX  I3 WORO
018A 0 C400 02B8        LO   L  EIGHT
018C 0 1801      SHRT3  SRA     1
0180 0 73FF             MOX     3 -1
018E 0 70FD             MOX     SHRT3
018F 0 D480 02B7 STO2   STO  I  ITBL1
0191 0 7401 02B7        MDX  L  ITBL1,1    INCR ITBLE
0193 0 4C00 0198        BSC  L  CTLWO
0195 0 C400 02B8 BZERO  LD   L  EIGHT
0197 0 70F7             MDX     STO2
                 *
                 ************************************************
                 *            BUILD IOCC CONTROL WORO
                 ************************************************
0198 0 7201      CTLWO  MDX     2 1
0199 0 7101             MDX     1 1
019A 0 C200             LO      2 0
019B 0 E900             OR      1 0
019C 0 0100             STO     1 0           PUT CTRL WO IN IOCC
                 *
                 *            DECR REGISTERS
                 *
0190 0 7201             MDX     2 1
019E 0 7101             MDX     1 1
019F 0 74FE 02B6        MDX  L  EDCT1,-2
01A1 0 70A8             MDX     BUILD
                 *
                 ************************************************
                 *            LOAD THE ADDR OF %SVINT< INTO
                 *            ALL INTR ADDR LOCATIONS.
                 ************************************************
01A2 0 6218      ADOR   LOX     2 24
01A3 0 610B             LOX     1 8
01A4 0 C400 02CC        LO   L  INTRN
01A6 0 D100      AODR1  STO     1 0
01A7 0 7101             MDX     1 1
01A8 0 72FF             MOX     2 -1
01A9 0 70FC             MOX     ADOR1
                 *
                 ************************************************
                 *            DETERMINE IF THIS DEVICE IS
                 *            ON THE SYSTEM AND IF DESIREO
                 *            INTR IS GREATER THAN
                 *            LEVEL 13
                 ************************************************
01AA 0 C400 02C8        LO   L  EDCT
01AC 0 D400 02B6        STO  L  EDCT1
01AE 0 6500 0280        LDX  L1 IOCC         XR1# IOCC
01B0 0 6600 02BC        LOX  L2 ITBLE&1      LOC OF INTR TABLE
01B2 0 C100      LORT2  LO      1 0          PUT IOCC IN ACCUM
01B3 0 F400 02B9        EOR  L  FFFF
01B5 0 4818             BSC     &-           IS THIS DEV ON SYS
01B6 0 700C             MOX     INCR         NO
01B7 0 C200      LORT1  LO      2 0          PUT IL WD IN ACCUM
01B8 0 4804             BSC     E            GREATER THAN 13
01B9 0 7013             MOX     GREAT
01BA 0 C400 028D        LD   L  MASK&1
01BC 0 E400 02CA        AND  L  FFFE         SET BIT 15# ZERO
01BE 0 D400 028D        STO  L  MASK&1
01C0 0 C200             LO      2 0          PUT IL WO IN ACCUM
01C1 0 630B             LOX     3 /000B      XR3# 11
01C2 0 7012             MOX     VECT
01C3 0 C400 02B9 INCR   LD   L  FFFF
01C5 0 D400 02D3        STO  L  PASS1
01C7 0 7102             MOX     1 2
01C8 0 7202             MDX     2 2
01C9 0 74FE 02B6        MOX  L  EDCT1,-2
01CB 0 70E6             MDX     LDRT2        GO TO NEXT IOCC
```

```
01CC 0 703E             MOX     WAIT2        RDY TO START OELAY
                 *
                 ************************************************
                 *            PLACE THE XFER VECTOR IN THE
                 *            CORRECT AOORESS
                 ************************************************
01CD 0 C400 028D GRFAT  LO   L  MASK&1
01CF 0 EC00 02C9        OR   L  ONE
01D1 0 D400 028D        STO  L  MASK&1       SET BIT 15# ONE
01D3 0 6319             LDX     3 /0019
01D4 0 C200             LO      2 0          PUT IL WD IN ACCUM
                 *
01D5 0 4828      VECT   BSC     &Z           IS BIT 0 ON
0106 0 7003             MDX     VECT1        * YES
01D7 0 1001             SLA     1            * NO
0108 0 7301             MOX     3 1
01D9 0 70FB             MOX     VECT
01DA 0 C400 02CD VECT1  LD   L  XFER1        ADOR OF DESIREO LVL
01DC 0 D300             STO     3 0
                 *
                 *            COMPLEMENT THE IL WO AND STORE
                 *
0100 0 C200             LO      2 0          PUT IL WD IN ACCUM
01DE 0 F400 02B9        EOR  L  FFFF         COMPLEMENT IL WORO
01E0 0 D400 028C        STO  L  MASK
01E2 0 0C00 028C        XIO  L  MASK         UNMASK THE DESIREO
                 *                           *INTR LEVEL
                 *
                 ************************************************
                 *            PUT CORRECT AREA COOE IN SENSE
                 *            DEVICE IOCC WORD AND START
                 *            THE I/0 METER%S<.
                 ************************************************
01E4 0 C101             LO      1 1          PUT CTRL WD IN ACCUM
01E5 0 EC00 02D2        OR   L  SENSE
01E7 0 D400 0293        STO  L  SNSD&1
01E9 0 7201             MDX     2 1          XR2# ILSW WORO
01EA 0 C400 02D3        LD   L  PASS1        BYPASS THE FIRST 1442
01EC 0 4810             BSC     -            *IF THIS IS THE FIRST
01ED 0 7009             MOX     BYPAS        *PASS THRU THE PROGRAM.
01EE 0 0C00 0292        XIO  L  SNSO         THESE 3 OPS NEEOED
01F0 0 7401 02BA        MDX  L  WORD,1       *IF THE DEVICE BEING
01F2 0 0C00 0292        XIO  L  SNSD         *STARTED IS A TAPE DR
01F4 0 0900             XIO     1 0          START A METER
01F5 0 3001      WAIT1  WAIT    1
01F6 0 1000             NOP     0
01F7 0 C400 02B9 BYPAS  LD   L  FFFF
01F9 0 D400 02D3        STO  L  PASS1
01FB 0 C100             LO      1 0          ADOR WORD OF IOCC
01FC 0 F400 0284        EOR  L  IOCC&4       1443 IOCC ADOR WORD
01FE 0 4818             BSC     &-           IS THIS DEVICE 1443
01FF 0 3004      WAIT4  WAIT    4            YES, WAIT FOR
                 *                           *PRINTER COMPL INTR
0200 0 1000             NOP     0
0201 0 C400 02CC        LO   L  INTRN        RESTORE ALL XFER
0203 0 0300             STO     3 0          *VECTORS TO SVINT
0204 0 74FE 02B6        MOX  L  EDCT1,-2
0206 0 7001             MOX     INCR1
0207 0 7003             MDX     WAIT2        RDY TO START DELAY
0208 0 7102      INCR1  MDX     1 2          XR1# NEXT IOCC
0209 0 7201             MOX     2 1          XR2# I/O DEV INT TBLE
020A 0 70A7             MDX     LDRT2
020B 0 0C00 028E WAIT2  XIO  L  MASK1        MASK INTRS 0-13
020D 0 0C00 0290        XIO  L  MASK2        MASK INTRS 14-23
020F 0 3002             WAIT    2
0210 0 1000             NOP     0
                 *
                 ************************************************
```

```
*                          DETERMINE THE NO OF 72 SEC
*                          LOOPS TO BE TAKEN %FROM DATA
*                          ENTRY SWS< AND THEN START DLY.
*********************************************
0211 0 0C00 027E   DLY0  XIO  L  DESWS      RD DATA ENTRY SWS
0213 0 6580 02CE         LDX  I1 COUNT      XR1# NO OF 72 SEC LP
0215 0 C400 02B5         LD   L  CNFIG&12   CORE STOR SPEED
0217 0 18C1              SRA     1
0218 4 4804              BSC     E           2 DR 4 USEC STORAGE
0219 0 7019              MDX     FAST        2 US STORAGE
021A 0 C400 02A6         LD   L  FDRUS       4 US STORAGE
021C 0 D4D0 02A8   DLY1  STO  L  CONST
021E 0 6365        DLY2  LDX  3 101          XR3# 101
021F 0 C400 02A8   DLY3  LD   L  CONST
0221 0 8400 02C9   DLY4  A    L  ONE         ADD 1 TO ACCUM
0223 0 4820              BSC     Z
0224 0 70FC              MDX     DLY4
0225 0 73FF              MDX     3 -1
0226 0 70F8              MDX     DLY3
0227 0 71FF              MDX     1 -1        MODIFY LOOP COUNT
0228 0 70F5              MDX     DLY2
0229 0 C400 028B         LD   L  MASK-1      CHANGE IOCC FOR
022B 0 F400 02D4         EOR  L  TWTY        *THE 2402
022D 0 D400 028B         STO  L  MASK-1
022F 0 30C3        WAIT3 WAIT    3           END OF TEST
*
*********************************************
*                          TO RUN TEST AGAIN, SET DATA
*                          SWITCHES TO THE NUMBER OF
*                          72 SECOND LOOPS DESIRED, AND
*                          PRESS THE START BUTTON.
*********************************************
0230 0 1000              NOP     0
0231 0 4C00 0211         BSC  L  DLY0
0233 0 C400 02A7   FAST  LD   L  TWOUS
0235 0 70E6              MDX     DLY1
*
*********************************************
*                          ROUTINE TO SERVICE PROGRAM
*                          GENERATED INTERRUPTS.
*********************************************
0236 0 0000        IRTN  DC      0
0237 0 0CC0 027A         XIO  L  SV8         SENSE ILSW
0239 0 E200              AND     2 0
023A 0 4C20 023F         BSC  L  SENS1,Z     DOES ILSW MATCH
023C 0 C0F9              LD      IRTN        NO
023D 0 D005              STO     SVINT
023E 0 7005              MDX     SVINT&1     GO TO COMM INTR RTN
023F 0 0CC0 0292   SENS1 XIO  L  SNSD        SENSE AND RESET DEV
0241 0 4CC0 0236         BOSC I  IRTN        EXIT
*
*********************************************
*                          ROUTINE TO SERVICE NON
*                          PROGRAM GENERATED INTERPT
*                          %WILL HANDLE ONLY ONE
*                          INTERRUPT AT A TIME<
*********************************************
0243 0 0000        SVINT DC      0
0244 0 D037              STO     SVID        SAVE ACCUMULATOR
0245 0 0C00 027A         XIO  L  SV8         RESET ILSW
0247 0 7402 0279         MDX  L  SV7,2       SET PASS SWITCH
0249 0 1010              SLA     16
024A 0 002B              STO     SV4         CLEAR AREA CODE CNTR
024B 0 C028              LD      SV2
024C 0 D02B              STO     SV6         SET IOCC IN USE SW
024D 0 C025        SVIN0 LD      SV1
024E 0 D028              STO     SV5         SET MODIFIER COUNTER
024F 0 C026        SVIN1 LD      SV4         *
```

```
0250 0 100B              SLA     11          *
0251 0 E825              OR      SV5         *BUILD IOCC
0252 0 E825              OR      SV6         *
0253 0 D029              STO     SVID&1      *
0254 0 0827              XIO     SVID        SENSE DSW AND RESET
0255 0 74FF 0277         MDX  L  SV5,-1
0257 0 70F7              MDX     SVIN1       BRANCH IF NOT ALL MD
0258 0 7401 0276         MDX  L  SV4,1       INCREMENT AREA CODE
025A 0 C01B              LD      SV4
025B 0 9016              S       SV0         CHECK IF ALL AC USED
025C 0 48C8              BSC     &           SKIP IF ALL AC USED
025D 0 70EF              MDX     SVIN0       GO SENSE WITH NXT AC
025E 0 74FF 0279         MDX  L  SV7,-1      SKIP IF SECOND PASS
0260 0 7001              MDX     *&1
0261 0 7005              MDX     SVEXT
0262 0 C012              LD      SV3
0263 0 D014              STO     SV6         SET IOCC FOR PI
0264 0 1010              SLA     16
0265 0 D010              STO     SV4         SET AC FOR NEXT
0266 0 70E6              MDX     SVIN0       *PASS
0267 0 C400 02CF   SVEXT LD   L  NOOP        IF INTERRUPTED OUT
0269 0 F480 0243         EOR  I  SVINT       *OF ANY WAIT, RETURN
0268 0 4C20 026F         BSC  L  SV11,Z      *TO THAT WAIT.
026D 0 74FF 0243         MDX  L  SVINT,-1
026F 0 C00C        SV11  LD      SVID        RESTORE ACCUMULATOR
0270 0 4CC0 0243         BOSC I  SVINT       EXIT
*
*                          **   CONSTANTS   **
*
*
0272 0 001F        SV0   DC      /001F       NUMBER OF AREA CODES
0273 0 00FF        SV1   DC      /00FF       NUMBER OF MODIFIERS
0274 0 0701        SV2   DC      /0701       SENSE/RESET DSW
0275 0 0700        SV3   DC      /0700       SENSE/RESET PISW
0276 0 0000        SV4   DC      0           AREA CODE INDICATOR
0277 0 0000        SV5   DC      0           MODIFIER INDICATOR
0278 0 0000        SV6   DC      0           IOCC IN USE
0279 0 0000        SV7   DC      0           PASS SWITCH
*                                            I/D CONTROL COMMANDS
027A   0000              BSS  E  0
027A 0 0000        SV8   DC      /0000       IOCC TO SENSE
027B 0 0300        SV9   DC      /0300       THE ILSW
027C 0 0000        SV10  DC      0           SENSE DSW IOCC
027D 0 0000              DC      0
027E 0 02CE        DESWS DC      COUNT       IOCC TO READ THE
027F 0 0240              DC      /0240       DATA ENTRY SWITCHES
0280 0 0000        IDCC  DC      /0000       IOCC TO START
0281 0 0402              DC      /0402       1442 NO1 METER
0282 0 00C0              DC      0           IOCC TO START
0283 0 0402              DC      /0402       1442 NO2 METER
0284 0 0294              DC      PRINT       IOCC TO START
0285 0 0500              DC      /0500       1443 NO1 METER
0286 0 0290              DC      READ        IOCC TO START
0287 0 0600              DC      /0600       2401 NO1 METER
0288 0 029D              DC      READ        IOCC TO START
0289 0 0620              DC      /0620       2401 NO2 METER
028A 0 029D              DC      READ        IOCC TO START
028B 0 0600              DC      /0600       2402 METER
028C 0 0000        MASK  DC      /0000       IOCC TO SET THE
028D 0 0480              DC      /0480       MASK REGISTER
028E 0 FFFF        MASK1 DC      /FFFF       IOCC TO MASK
028F 0 0480              DC      /0480       INTERRUPTS 0-13
0290 0 FFFF        MASK2 DC      /FFFF       IOCC TO MASK
0291 0 0481              DC      /0481       INTERRUPTS 14-23
0292 0 0000        SNSD  DC      /0000       IOCC TO SENSE
0293 0 0701              DC      /0701       A DEVICE
0294 0 0008        PRINT DC      B           1443 PRINT TABLE
0295 0 2435              DC      /2435             ME
0296 0 1335              DC      /1335             TE
```

IBM MAINTENANCE DIAGNOSTIC PROGRAM FOR THE 1800 SYSTEM   PART NO. 2196479   IBM MAINTENANCE DIAGNOSTIC PROGRAM FOR THE 1800 SYSTEM   PART NO. 2196479

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METER EXERCISER   METER EXERCISER

```
0297 0 29C0          OC    /2900              R
0298 0 3517          OC    /3517         EX
0299 0 3529          DC    /3529          ER
029A 0 3339          DC    /3339           CI
029B 0 1235          DC    /1235            SE
029C 0 2900          DC    /2900              R
029D 0 40C8   READ   DC    /4008
029E   00C8          BSS   8
02A6 0 84AA   FORUS  DC    /84AA   CONST FOR 4US SYS
02A7 0 0900   TWOUS  DC    /0900   CONST FOR 2US SYS
02A8 0 0000   CONST  DC    /0000   NO OF 72 SEC LOOPS
02A9   000D   CNFIG  BSS   13      EDIT CD INFORMATION
02B6 0 000C   EOCT1  DC    /000C   KEEP TRACK OF ED CTS
02B7 0 02BC   ITBL1  DC    ITBLE&1 LOC OF INTR TABLE
02B8 0 8000   EIGHT  DC    /8000   CONSTANT# /8000
02B9 0 FFFF   FFFF   DC    /FFFF   CONSTANT# MINUS ONE
02BA 0 0000   WORD   DC    /0000   A UTILITY LOCATION
02BB 0 02BC   ITBLE  DC    ITBLE&1 ITBLE ADDRESS
02BC   000C          BSS   12
02C8 0 000C   EDCT   DC    /000C   NO OF EDIT FIELDS
02C9 0 0001   ONE    DC    /0001   CONSTANT# /0001
02CA 0 FFFE   FFFE   DC    /FFFE   CONSTANT# /FFFE
02CB 0 000E   EASY   DC    /000E   CONSTANT# /000E
02CC 0 0243   INTRN  DC    SVINT   SPURIOUS INTR RTN
02CD 0 0236   XFER1  DC    IRTN    PROG GEN INTR RTN
02CE 0 0000   COUNT  DC    /0000   DATA ENTRY SW SETNG
02CF 0 1000   NOOP   DC    /1000
02D0 0 4C00   RSTR   DC    /4C00
02D1 0.013E          DC    RERUN
02D2 0 0701   SENSE  DC    /0701
0050 0        BEGIN  EQU   /50
02D3 0 00C0   PASS1  DC    0
02D4 0 0020   TWTY   DC    /0020   CONSTANT FOR 2402
02D6   0050          END   BEGIN
     NO STATEMENTS FLAGGED IN THE ABOVE ASSEMBLY
```

```
ADDR    01A2  017E
ADDR1   01A6  01A9
BEGIN   0050  02D6
BITO    0172  014F
BUILD   014A  017D 01A1
BYPAS   01F7  01ED
BZERO   0195  0185
CNFIG   02A9  0136 0148 0215
CONST   02A8  021C 021F
COUNT   02CE  0213 027E
CTLWD   0198  0193
DESWS   027E  0211
DLY0    0211  0231
DLY1    021C  0235
DLY2    021E  0228
DLY3    021F  0226
DLY4    0221  0224
EASY    02CB  0154
EDCT    02C8  0142 01AA
EDCT1   02B6  0144 0178 019F 01AC 01C9 0204
EIGHT   02B8  015C 0161 0169 0172 018A 0195
FAST    0233  0219
FFFE    02CA  018C
FFFF    02B9  01B3 01C3 010E 01F7
FORUS   02A6  021A
GREAT   01CD  01B9
ILSWD   017F  0170
ILWD1   0161  015B
INCR    01C3  0186
INCR1   0208  0206
INTRN   02CC  01A4 0201
IOCC    0280  0146 01AE 01FC
IRTN    0236  023C 0241 02C0
ITBLE   02BB  013E 01B0 0287 028B
ITBL1   02B7  0140 016E 0178 017F 018F 0191
LDRT1   01B7
LDRT2   01B2  01CB 020A
LES14   0169  0158
LOAD    012C  0124
MASK    028C  01BA 01BE 01C0 0101 01E0 01E2 0229 0220
MASK1   028E  020B
MASK2   0290  020D
NOOEV   0175  014C
NOOP    02CF  0267
ONE     02C9  015E 0166 01CF 0221
PASS1   02D3  01C5 01EA 01F9
PRINT   0294  0284
READ    029D  0286 0288 028A
RERUN   013E  02D1
RSTR    02D0  012C 0130
SENSE   02D2  01E5
SENS1   023F  023A
SHRT1   016B  016D
SHRT2   0163  0165
SHRT3   018C  018E
SNSO    0292  01E7 01EE 01F2 023F
STO1    016E  0160 0168 0174
STO2    018F  0197
SVEXT   0267  0261
SVINT   0243  023D 023E 0269 026D 0270 02CC
SVINO   024D  C25D 0266
SVIN1   024F  0257
SVIO    027C  0244 0253 0254 026F
SVO     0272  025B
SV1     0273  024D
SV11    026F  026B
SV2     0274  024B
SV3     0275  0262
```

```
SV4     0276   024A 024F 0258 025A 0265
SV5     0277   024E 0251 0255
SV6     027B   024C 0252 0263
SV7     0279   0247 025E
SVB     027A   0237 0245
SV9     027B
TWOUS   02A7   0233
TWTY    02D4   022B
VECT    01D5   01C2 01D9
VECT1   01DA   01D6
WAIT1   01F5   3001
WAIT2   02CB   01CC 0207 3002
WAIT3   022F   3003
WAIT4   01FF   3004
WORD    02BA   0150 0152 0156 0186 018B 01F0
XFER    013B   013D
XFER1   02CD   01DA
END OF ASSEMBLY
```

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TABLE OF CONTENTS

1. PURPOSE

    A. CHECK THE ACCURACY OF ALL OF THE USE METERS.
    B. INSURE THAT NO METERS ADVANCE WHEN THE METER KEY IS SWITCHED
       TO CE MODE.
    C. CHECK THE METER CONTROL CIRCUITS.

2. PREREQUISITES

    2.1   PROGRAM

        THIS PROGRAM IS LOADED BY THE RELOCATABLE DIAGNOSTIC LOADER. AN EDIT
        CARD, CONTAINING THE NECESSARY IOCC INFORMATION FOR THIS 1800 SYSTEM,
        MUST FOLLOW THE LAST CARD OF THE PROGRAM. (SEE SEC 6.1)

    2.2   EQUIPMENT

        A. CUSTOMER ENGINEER USE METER KEY.
        B. CARD OR PAPER TAPE READER.

3. USE PROCEDURE

    THERE ARE 7 STEPS TO THE USE PROCEDURE. A DETAILED DESCRIPTION STARTS IN
    SECTION 3.1.

    1. RECORD ALL METER READINGS.
    2. MAKE ALL METERED I/O UNITS READY.
    3. LOAD THE PROGRAM.
    4. SET THE DESIRED NUMBER OF 72 SECOND LOOPS IN THE PC DATA ENTRY SWITCHES.
    5. CHECK CUSTOMER METERS
    6. COMPUTE THE ELAPSED TIME. (BY HAND)
    7. CHECK THE METER CONTROL CIRCUITS.

    3.1   LOADING

        1. RECORD THE READINGS ON ALL OF THE CUSTOMER METERS. THE CUSTOMER

       MUST BE GIVEN CREDIT FOR THIS TEST TIME.
    2. MAKE ALL METERED I/O UNITS READY.

        1442 (FIRST)   IF THE 1800 SYSTEM IS EQUIPPED WITH A 1442, IT
                        MUST BE USED TO LOAD THE PROGRAM. AFTER THE
                        PROGRAM HAS LOADED, DO NOT PRESS THE 1442 NPRO
                        BUTTON, AS THIS WILL PREVENT THE METER FROM RUNNING
        1442 (SECOND ONLY) PLACE A FEW CARDS IN THE FEED HOPPER AND
                        PRESS THE 1442 START KEY. THE 1442 READY LAMP
                        SHOULD GLOW.
        1443   TURN ON THE POWER SWITCH AND PRESS THE 1443
                        START KEY. THE 1443 READY LAMP SHOULD GLOW.
        2310 DISK STORAGE-TURN THE SWITCH ON THE FRONT OF THE UNIT TO
                        'ENABLE'.
        2401   PLACE A REEL OF TAPE IN EACH TAPE DRIVE. PRESS
                        THE 2401 LOAD REWIND BUTTON(S). PRESS THE 2401
                        START BUTTON(S).
        2402   PLACE A REEL OF TAPE IN EACH TAPE DRIVE. PRESS
                        BOTH LOAD REWIND BUTTONS AND BOTH
                        START BUTTONS. IT IS NECESSARY TO RUN THE
                        DELAY LOOP TWICE TO ENSURE THAT EACH DRIVE
                        CAN CONTROL THE METER. DURING THE FIRST
                        TIMING LOOP THE METER WILL BE UNDER CONTROL
                        OF DRIVE ZERO. WHEN THE TIMING LOOP TERMINATES
                        THE TAPE IN DRIVE ZERO SHOULD BE RETURNED TO
                        LOAD POINT SO THAT ONLY DRIVE ONE CAN CONTROL
                        THE METER DURING THE SECOND TIMING LOOP. DRIVE
                        ZERO WILL BE STARTED BY THE PROGRAM ON ALL ODD
                        NUMBERED RUNS AND DRIVE ONE ON ALL EVEN
                        NUMBERED RUNS.

    4. REFER TO THE RELOCATABLE DIAGNOSTIC LOADER DOCUMENTATION FOR
       THE LOADING PROCEDURE.

                                    NOTE

       IF THE PROGRAM LOADED CORRECTLY, AND ALL METERED I/O UNITS ARE IN
       A READY STATUS, THE PROGRAM WILL STOP AT WAIT 2. (B REG 3002)

    3.2   OPERATION.

        3.2.1 TO CHECK CUSTOMER METERS.
            1. SET THE DATA ENTRY SWITCHES TO INDICATE THE NUMBER OF 72
            SECOND LOOPS THAT YOU WISH TO MAKE.
            2. IF THE 1442 WAS USED TO LOAD THE PROGRAM, RECORD THE METER
            READING. (AGAIN).
            3. PRESS PC START BUTTON.
            4. THE PROGRAM WILL STOP AT WAIT 3 (B REG 3003) WHEN THE DESIRED
            DELAY IS COMPLETED. ALL CUSTOMER METERS SHOULD HAVE ADVANCED .02
            HOURS FOR EACH 72 SECOND LOOP RUN.
            5. IF THE 2402 METER IS BEING CHECKED, IT IS NECESSARY TO RUN
            THE DELAY LOOP TWICE. DURING THE FIRST RUN (AND ALL SUBSEQUEN
            ODD NUMBERED RUNS), THE METER WILL BE UNDER CONTROL OF DRIVE
            ZERO. WHEN THE RUN IS COMPLETED (PROGRAM STOPS AT WAIT 3),
            PRESS THE 'RESET' AND THE 'LOAD REWIND' BUTTONS ON DRIVE
            ZERO, PLACE A FEW CARDS IN THE 1442 AND PRESS THE 1802
            'RESET' AND 'START' BUTTONS. PROGRAM WILL STOP AT WAIT 2.
            PRESS THE 1802 'START' BUTTON TO START THE DELAY LOOP.
            DURING THE SECOND RUN (AND ALL SUBSEQUENT EVEN NUMBERED RUNS),
            THE METER WILL BE UNDER CONTROL OF DRIVE NUMBER 1. BEFORE
            EACH RUN, CHECK THAT BOTH DRIVES ARE AT LOAD POINT AND 'READY'
            6. TO REPEAT TEST, SET LOOP COUNT IN THE DATA ENTRY SWITCHES AND
            PRESS THE PC START BUTTON.

        3.2.2 CONTROL CIRCUITRY CHECK.

            EACH METER WILL NOW BE CHECKED TO INSURE THAT IT RUNS AND STOPS

RUNNING AT THE CORRECT TIMES.
1. CHECK THAT NO METERS ARE RUNNING WHILE THE PROGRAM IS AT WAIT 3.
2. TURN THE METER KEY TO C.E. MODE. WHILE THE PROGRAM IS RUNNING CHECK THAT NO METERS ARE RUNNING. RETURN THE METER KEY TO THE NORMAL POSITION.
3. WHILE THE PROGRAM IS RUNNING IN A 72 SECOND DELAY LOOP, 1442-THE METER SHOULD STOP WHEN THE NPRO BUTTON IS PRESSED. (HOPPER MUST BE EMPTY)
1443-THE METER SHOULD STOP IF THE 1443 STOP BUTTON IS PRESSED.
2310-THE METER IS CONTROLLED BY THE 'ENABLE/DISABLE' SWITCH ON THE FRONT COVER. IF THE POSITION OF THE SWITCH IS CHANGED, THIS CHANGE SHOULD NOT AFFECT THE METER UNTIL AFTER THE PC HAS COME TO A WAIT. (AND THEN HAS STARTED AGAIN).
2401/D2 THE METER SHOULD RUN WHENEVER THE TAPE IS LOADED AND NOT AT LOAD POINT. IF A TAPE DRIVE IS LOADED AND NOT AT LOAD POINT, PRESSING THE 'LOAD REWIND' BUTTON SHOULD STOP THE METER WHEN THE TAPE REACHES LOAD POINT.

3.3   TERMINATION

THE PROGRAM WILL STOP AT WAIT 3 (B REG 3DD3) WHEN THE EXERCISE IS COMPLETED. TO REPEAT EXERCISE, REFER TO WAIT 3 DESCRIPTION.

3.4   RESTART

PLACE A FEW BLANK CARDS IN THE FEED HOPPER OF THE FIRST 1442 AND PRESS THE START KEY. THE 1442 READY LAMP SHOULD GLOW.
PRESS THE PC RESET BUTTON THEN THE START BUTTON. THIS WILL REINITIALIZE THE PROGRAM, CONDITION ALL THE METERS TO RUN, THEN STOP AT WAIT 2 (B REG 3D02).

3.5   PROGRAM HALTS

PROGRAM WAITS ARE USED IN THIS PROGRAM, AND ARE IDENTIFIED BY REFERENCING THE B REG AND I REG.

A PROGRAM WAIT IS OF THE FORM,

        3DXX, (B REG).

A DESCRIPTION OF THE INDIVIDUAL PROGRAM WAITS CAN BE FOUND AT THE BEGINNING OF THE PROGRAM LISTING. A TYPICAL WAIT DESCRIPTION FOLLOWS. IT IS INCLUDED TO SHOW THE FORMAT OF THE LISTING, AND IT IS NOT NECESSARILY A DESCRIPTION OF AN ACTUAL WAIT.

****

3DD1 0 01ED   DC   WAIT1+1
                        *   WAIT 1
                        *
                        *   ONE OF THE METERED I/O UNITS
                        *   FAILED TO SEND A RESPONSE
                        *   INTERRUPT TO THE PROGRAM. INDEX
                        *   REGISTER 1 WILL HAVE THE ADDRESS
                        *   OF THE IOCC. THE AREA CODE WILL
                        *   INDICATE THE I/O UNIT NOT READY.
                        *   IF A 24D1/D2 DRIVE IS NOT READY,
                        *   PROGRAM WILL NOT STOP AT WAIT 1.
                        *
****

B REG, (FIRST 4 DIGIT GROUP) CORRESPONDS TO B REG READING.

I REG, (SECOND 4 DIGIT GROUP) CORRESPONDS TO I REG READING.

4   PRINTOUTS

     THERE ARE NO PRINTOUTS.

5.   COMMENTS (NONE)

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IBM MAINTENANCE DIAGNOSTIC PROGRAM FOR THE 1800 SYSTEM
METER EXERCISER
6   APPENDIX

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PAGE 3
METER

6.1   EDIT PROCEDURE

THE FOLLOWING EDIT PROCEDURE IS FOR CARD INPUT. THE EDIT PROCEDURE FOR PAPER TAPE INPUT IS LOCATED IN THE PAPER TAPE EDIT UTILITY PROGRAM DOCUMENTATION. THE PROPER EDIT CARDS MUST BE THE LAST CARDS IN THIS PROGRAM DECK. THE FOLLOWING FORMS ARE PROVIDED TO AID IN MANUALLY PREPARING THESE EDIT CARDS OR UPDATING EXISTING EDIT CARDS. IF IT IS NECESSARY TO PREPARE OR MODIFY EDIT CARDS, FILL IN THE NECESSARY DATA IN THE FORMS PRIOR TO PUNCHING THE CARDS. CARD COLUMNS THAT ARE SHADED SHOULD BE LEFT BLANK.

DDEF   STANDS FOR DEVICE DEFINITION EDIT FIELD. IT INCLUDES:

1.   THE INTERRUPT LEVEL ASSOCIATED WITH THIS DEVICE (USE HEX NOTATION, 00-17).
2.   THE ILSW BIT POSITION ASSOCIATED WITH THIS DEVICE (USE HEX NOTATION, 0-F).
3.   THE CHANNEL ASSIGNED TO THIS DEVICE (0-8). IF THIS IS A DPC DEVICE, PUNCH AN "F" IN THE CARD COLUMN.

	PROGRAM I.D.	CARD SEQUENCE NUMBER	NUMBER OF EDIT ENTRIES	1442 (FIRST) DDEF			1442 (FIRST) AREA CODE		1442 (SECOND) DDEF			1442 (SECOND) AREA CODE		1443 (FIRST) DDEF			1443 (FIRST) AREA CODE		2401 (FIRST) DDEF			2401 (FIRST) AREA CODE		2401 (SECOND) DDEF			2401 (SECOND) AREA CODE		2402 DDEF			2402 AREA CODE	
				INTERRUPT LEVEL (HEX)	ILSW BIT (HEX)	CHANNEL (OR F)	AREA CODE (HEX)	MODIFIER (HEX)	INTERRUPT LEVEL (HEX)	ILSW BIT (HEX)	CHANNEL (OR F)	AREA CODE (HEX)	MODIFIER (HEX)	INTERRUPT LEVEL (HEX)	ILSW BIT (HEX)	CHANNEL (OR F)	AREA CODE (HEX)	MODIFIER (HEX)	INTERRUPT LEVEL (HEX)	ILSW BIT (HEX)	CHANNEL (OR F)	AREA CODE (HEX)	MODIFIER (HEX)	INTERRUPT LEVEL (HEX)	ILSW BIT (HEX)	CHANNEL (OR F)	AREA CODE (HEX)	MODIFIER (HEX)	INTERRUPT LEVEL (HEX)	ILSW BIT (HEX)	CHANNEL (OR F)	AREA CODE (HEX)	MODIFIER (HEX)
COLUMN 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21							26		31			36		41			46		51			56		61			66		71				
CARD 0	E B 6 0 0	E 0 0 0	0 0 0 D				1 0 0 0										3 0 0 0																		
END	E B 6 0 0	F F F F																																

CARD COLUMNS 77-80 WILL CONTAIN THE SPEED OF THE CORE STORAGE. FOR 2 MICRO SEC. STORAGE PUNCH 0002, AND FOR 4 MICRO SEC. STORAGE, PUNCH 0004.

NOTE: IF A DEVICE IS NOT ON THIS SYSTEM, PUNCH THE CORRESPONDING ENTRY FFFF FFFF.

NO "END EDIT" CARD IS REQUIRED FOR THIS PROGRAM.

```
02BC                    *   SEE PID 0802 FOR DESCRIPTION
                        A8S
                        ORG    /3500                        88700C010
                                                            88700020
                        *                                   88700030
                        *   DIMAL INITIAL LOADER PROGRAM WAIT   88700040
                        *   DESCRIPTION.                    88700050
3500 0  0010            *   OC    W3500+1   WAIT 500        88700060
                        *                                   88700070
                        *                                   88700080
                        *   A DSW ERROR WAS                 88700090
                        *   DETECTED DURING LOAD            88700100
                        *   OPERATIONS.RELOAD THE           88700110
                        *   INITIAL LOADER.                 88700120
3501 0  0037            *   OC    W3501+1   WAIT 501        88700130
                        *                                   88700140
                        *   AN INITIAL LOADER EDIT          88700150
                        *   CARO ERROR HAS BEEN             88700160
                        *   DETECTED.CHECK THE EDIT         88700170
                        *   CARDS.INSURE THAT COLUMN        88700180
                        *   1 OF BOTH CARDS CONTAINS        88700190
                        *   AN 'E',THAT THE PIO ON          88700200
                        *   BOTH CARDS IS 0200,THAT         88700210
                        *   CARO 1 SEQUENCE NUMBER IS       88700220
                        *   ED00 AND CARD 2 IS FFFF.        88700230
                        *   CORRECT ANY ERRORS,PLACE        88700240
                        *   BOTH CARDS IN THE 1442,         88700250
                        *   MAKE IT READY AND CONTINUE      88700260
3502 0  0056            *   OC    W3502+1   WAIT 502        88700270
                        *                                   88700280
                        *                                   88700290
                        *   1442 IS NOT READY.READY         88700300
                        *   THE 1442 WITH INITIAL           88700310
                        *   LOADER EDIT CARDS AND           88700320
                        *   CONTINUE.                       88700330
3503 0  0058            *   OC    W3503+1   WAIT 503        88700340
                        *                                   88700350
                        *                                   88700360
                        *   A 1442 OSW ERROR WAS            88700370
                        *   DETECTED DURING EDIT CARD       88700380
                        *   INPUT. REENTER BOTH EDIT        88700390
                        *   CARDS IN THE 1442 HOPPER,       88700400
                        *   MAKE IT READY AND CONTINUE      88700410
3504 0  00A7            *   DC    W3504+1   WAIT 504        88700420
                        *                                   88700430
                        *                                   88700440
                        *   THE DISK PACK CE WORD           88700450
                        *   WAS NOT FOUND ON THE            88700460
                        *   HISTORY TRACK. INSURE THE       88700470
                        *   CE DISK PACK HAS BEEN           88700480
                        *   LOADED.DEPRESS START TO         88700490
                        *   TRY AGAIN.IF ERROR PER-         88700500
                        *   SISTS,REINITIALIZE THE          88700510
                        *   CE DISK PACK.                   88700520
3505 0  00AE            *   DC    W3505+1   WAIT 505        88700530
                        *                                   88700540
                        *                                   88700550
                        *   HISTORY DATA FOUND ON THE       88700560
                        *   HISTORY TRACK INDICATES         88700570
                        *   THAT 4 OR MORE BAD CYLIN-       88700580
                        *   DERS EXIST ON THE CE DISK       88700590
                        *   PACK.THIS IS CONSIDERED A       88700600
                        *   BAD PACK.A NEW CE PACK          88700610
                        *   SHOULD BE USED.IF IT IS         88700620
                        *   DESIRED TO USE THE BAD          88700630
                        *   PACK,SET SNS/PGM SWITCH 0       88700640
                        *   AND CONTINUE.                   88700650
3506 0  0147            *                                   88700660
                        *   OC    W3506+1   WAIT 506        88700670
                                                            88700680
```

```
                        *   THE 1442 IS NOT READY           88700690
                        *   READY THE 1442 WITH DIMAL       88700700
                        *   OBJECT DECK,OR PRESS 1442       88700710
                        *   START FOR LAST CARD AND         88700720
                        *   CONTINUE.                       88700730
3507 0  0149            *                                   88700740
                        *   DC    W3507+1   WAIT 507        88700750
                                                            88700760
                        *                                   88700770
                        *   A 1442 DSW ERROR WAS            88700780
                        *   DETECTED WHILE LOADING          88700790
                        *   DIMAL. RELOAD THE DIMAL         88700800
                        *   OBJECT DECK IN THE 1442         88700810
                        *   HOPPER AND MAKE IT READY.       88700820
                        *   DEPRESS THE 1800 RESET          88700830
                        *   AND START BUTTONS.PROGRAM       88700840
                        *   LOADING SHOULD OCCUR.           88700850
3508 0  016E            *   OC    W3508+1   WAIT 508        88700860
                                                            88700870
                        *                                   88700880
                        *   A CHECKSUM ERROR WAS            88700890
                        *   DETECTED DURING DIMAL           88700900
                        *   LOADING.NPRO THE 1442.THE       88700910
                        *   1ST CARD EJECTED IS THE         88700920
                        *   CARD IN ERROR.INSURE CARO       88700930
                        *   IS IN CORRECT SEQUENCE.IF       88700940
                        *   NO PROBLEM IS APPARENT,         88700950
                        *   REENTER BOTH EJECTED CARDS      88700960
                        *   AND CONTINUE.RELOADING          88700970
                        *   MAY ALSO BE DONE BY PLAC-       88700980
                        *   ING THE ENTIRE DIMAL DECK       88700990
                        *   IN THE 1442 HOPPER AND          88701000
                        *   MAKE IT READY.DEPRESS 1800      88701010
3509 0  01C8            *   OC    W3509+1   WAIT 509        88701020
                        *   RESET AND START BUTTONS.        88701030
                                                            88701040
                        *                                   88701050
                        *   A LAST CARO SEQUENCE WAS        88701060
                        *   INITIATED BEFORE THE            88701070
                        *   COMPLETE DIMAL DECK WAS         88701080
                        *   READ IN.INSURE THAT THE         88701090
                        *   COMPLETE OIMAL DECK HAS         88701100
                        *   BEEN LOADED.                    88701110
350A 0  020E            *   DC    W350A+1   WAIT 50A        88701120
                                                            88701130
                        *                                   88701140
                        *   DISK HOME BIT DID NOT           88701150
                        *   COME ON IN THE OSW AFTER        88701160
                        *   THE 3RD ATTEMPT TO SEEK         88701170
                        *   HOME.CORRECT FAILURE AND        88701180
                        *   CONTINUE.IF CORE IS DES-        88701190
                        *   TROYED,RELOADED MUST BE         88701200
                        *   ACCOMPLISHED.                   88701210
350B 0  021C            *   DC    W350B+1   WAIT 50B        88701220
                                                            88701230
                        *                                   88701240
                        *   2310 OISK DRIVE NOT READY.      88701250
                        *   READY THE 2310 AND              88701260
                        *   CONTINUE.                       88701270
350C 0  022D            *   DC    W350C+1   WAIT 50C        88701280
                                                            88701290
                        *                                   88701300
                        *   ATTEMPTED DISK READ.DRIVE       88701310
                        *   WENT NOT READY.MAKE DRIVE       88701320
                        *   READY AND CONTINUE. IF          88701330
                        *   DISK ARM POSITION IS            88701340
                        *   CHANGED,RELOADING DIMAL         88701350
                        *   DECK IS REQUIRED.               88701360
```

```
3500 0  023A        *           DC      W350D+1    WAIT 50D                       88701370
                    *                                                             88701380
                    *                                                             88701390
                    *                      A DSW ERROR OCCURED ON A               88701400
                    *                      DISK READ OP ON EACH OF                88701410
                    *                      3 ATTEMPTS.THE A REG.                  88701420
                    *                      CONTAINS THE ERROR BITS.               88701430
                    *                      PRESSING START AFTER THE               88701440
                    *                      ERROR WILL CAUSE PROGRAM               88701450
                    *                      TO MAKE 3 MORE TRIES TO                88701460
                    *                      READ. IF ERROR PERSISTS.               88701470
                    *                      CORRECT AND RELOAD DIMAL.              88701480
                    *                                                            88701490
350E 0  0245        *           DC      W350E+1    WAIT 50E                      88701500
                    *                                                            88701510
                    *                      ATTEMPTED DISK WRITE.DRIVE            88701520
                    *                      NOT READY.MAKE DRIVE READY            88701530
                    *                      AND CONTINUE.IF DISK ARM              88701540
                    *                      POSITION IS CHANGED.                  88701550
                    *                      RELOADING DIMAL DECK IS               88701560
                    *                      REQUIRED.                             88701570
                    *                                                            88701580
350F 0  0253        *           DC      W350F+1    WAIT 50F                      88701590
                    *                                                            88701600
                    *                      A DISK WRITE OR MODULO 4              88701610
                    *                      CHECK ERROR EXISTED ON                88701620
                    *                      EACH OF 3 ATTEMTS TO WRITE            88701630
                    *                      DEPRESS START BUTTON WILL             88701640
                    *                      CAUSE PROGRAM TO MAKE 3               88701650
                    *                      ADDITIONAL ATTEMPTS TO                88701660
                    *                      WRITE. IF ERROR PERSISTS.             88701670
                    *                      CORRECT AND RELOAD DIMAL.             88701680
                    *                                                            88701690
3510 0  0299        *           DC      W3510+1    WAIT 510                      88701700
                    *                                                            88701710
                    *                      THIS WAIT INDICATES THAT              88701720
                    *                      THE LOADING OF THE CARD               88701730
                    *                      DECK REPRESENTING THE                 88701740
                    *                      PAPER TAPE VERSION OF                 88701750
                    *                      DIMAL HAS BEEN COMPLETED              88701760
                    *                                                            88701770
3511                            ORG     0          CARD 1                        88701780
                    *                                                            88701790
03E8                IN      EQU     1000                                         88701800
044C                IOA     EQU     1100                                         88701810
0440                SIO     EQU     IOA+1                                        88701820
044E                OUT     EQU     SIO+1                                        88701830
                    *                                                            88701840
                    *              DIMAL SYSTEM INITIAL LOADER                   88701850
                    *                                                            88701860
                    *    THE INITIAL LOADER PERFORMS THE                         88701870
                    *    FOLLOWING FUNCTIONS.                                    88701880
                    *                                                            88701890
                    *    1. INPUT AND CONVERT THE LOADER EDIT                    88701900
                    *       CARDS.                                               88701910
                    *    2. INSURES THAT THE CE DISK PACK IS                     88701920
                    *       LOADED,AND USABLE.                                   88701930
                    *    3. ASSIGNS THE CYLINDERS TO BE USE BY                   88701940
                    *       THE DISK DIAGNOSTIC MONITOR.                         88701950
                    *    4. INPUTS THE DDM HEADER,COLD START                     88701960
                    *       LOADER,DDM LOADER/ORGANIZER AND THE                  88701970
                    *       DDM SELECT/EXECUTE PROGRAMS AND                      88701980
                    *       WRITES THEM ON THE DISK.                             88701990
                    *    5. INPUTS THE DDM LOADER/ORGANIZER FROM                 88702000
                    *       THE DISK UPON COMPLETION OF INITIAL-                 88702010
                    *       IZING THE DISK WITH THE DIMAL SYSTEM                 88702020
                    *                                                            88702030
                    *    THIS IS THE 1ST CARD OF THE LOADER.IT                   88702040
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                    *           IS READ IN BY THE IPL OPERATION AND IS           88702050
                    *           USED TO LOAD THE REST OF THE LOADER.             88702060
                    *                                                            88702070
0000 0  0B19    IPL1    XIO     RDPAC       READ PACKED MODE                     88702080
0001 0  0B1A    IPL2    XIO     DSW         SENSE 1442 STATUS                    88702090
0002 00 4C040001        BSC  L  IPL2,F      BRANCH IF NOT READY                  88702100
0004 0  B017            CMP     DSW         LOOK FOR OP COMPLETE                  88702110
0005 0  7009            MDX     W3500       BRANCH - BIT 2 ON                    88702120
0006 0  7006            MDX     IPL3        BRANCH - BITS 5 OR 6                 88702130
0007 00 7424001A        MDX  L  RDPAC,36    SET IOCC FOR NXT CD                  88702140
0009 00 74FF001E        MDX  L  CDCT,-1     SKIP WHEN LOADER IN                  88702150
000B 0  70F4            MDX     IPL1        GO READ NEXT CARD                    88702160
000C 0  7004            MDX     PREP        PREPARE INPUT AREA                   88702170
000D 0  B011    IPL3    CMP     K0100       CHECK IF BITS 5 OR 6                 88702180
000E 0  1000            NOP                                                      88702190
000F 0  3500    W3500   DC      /3500       DSW INDICATES ERROR                  88702200
0010 0  70F0            MDX     IPL2                                             88702210
0011 00 67000141 PREP   LDX  L3 321         SET CONSTANT 321 IN                  88702220
0013 00 6F00044C        STX  L3 IOA         *INPUT AREA                         88702230
0015 0  C802            LDD     BRN         PICKUP RESTART INSTR                 88702240
0016 0  08E9            STD     9           SET IN LOCS 0 AND 1                  88702250
0017 0  700C            MDX     EDIT        BRANCH TO INPUT EDIT                 88702260
0018    0000            BSS  E  0                                               88702270
001B 00 4C00027E BRN    BSC  L  RSTRT       RESTART INSTRUCTION                 88702280
001A C  0024    RDPAC   DC      36          READ 1442 PACKED                    88702290
001B 0  1601            DC      /1601       *IOCC WORD                          88702300
001C 0  0800    OSW     DC      /0800       SENSE 1442 OSW  IOCC                88702310
001D 0  1700            DC      /1700                                           88702320
001E 0  0013    CDCT    DC      19          LOADER CARD COUNT                   88702330
001F 0  0100    K0100   DC      /0100       ERR CK DSW CONSTANT                 88702340
0020 0  FFFF    KFFFF   DC      /FFFF       CONSTANT                            88702350
                ******************************************                      88702360
0021                    ORG     36          CARD 2                              88702370
                ******************************************                      88702380
                    *                                                           88702390
                    *    THIS SECTION READS,CONVERTS AND CHECKS                 88702400
                    *    THE INITIAL LOADER EDIT CARDS.                         88702410
                    *                                                           88702420
0024 0  08F7    EDIT    XIO     DSW         SENSE FOR STATUS                    88702430
0025 00 4C040055        BSC  L  W3502,E     BRANCH ON NOT READY                 88702440
0027 0  6301            LDX  3  1           SET EDIT CARD IND.                  88702450
0028 0  6B35            STX  3  EOSW                                            88702460
0029 0  0830            XIO     RDED        READ A CARD                         88702470
002A 0  08F1    EDIT1   XIO     DSW         SENSE STATUS                        88702480
002B 0  1801            SRA     1           POSITION OSW                        88702490
002C 00 4C04002A        BSC  L  EDIT1,E     BRANCH IF BUSY                      88702500
002E 0  180C            SRA     12          POSITION DSW                        88702510
002F 00 4C040057        BSC  L  W3503,E     BRANCH ON ERROR DSW                 88702520
0031 0  0B2A            XIO     DSW1        RESET OSW                           88702530
0032 00 C40003E8        LD   L  IN          PICKUP 1ST WORD                     88702540
0034 00 4C280038        BSC  L  EDIT2,+Z    BRANCH IF EDIT CARD                 88702550
0036 0  3501    W3501   DC      /3501       EDIT CARD ERROR                     88702560
0037 0  70EC            MDX     EDIT        RESTART                             88702570
0038 0  7026    EDIT2   MDX     HBCV        GO CONVERT HEX TO BI               88702580
0039 00 C400044E        LD   L  OUT         GET 1ST CONVERTED WO               88702590
003B 0  F020            EOR     DSW1        CHECK FOR PIO 802                   88702600
003C 0  4820            BSC     Z           SKIP IF PROPER PIO                 88702610
003D 0  70F8            MDX     W3501       BRANCH ON WRONG PIO                88702620
003E 0  C01F            LD      EOSW        PICKUP EDIT SWITCH                 88702630
003F 0  4808            BSC     +           SKIP IF EDIT SW = 1               88702640
0040 0  700E            MDX     EDIT3       PICKUP SEQUENCE NMBR              88702650
0041 00 C400044F        LD   L  OUT+1       PICKUP SEQUENCE NMBR             88702660
0043 0  F015            EOR     KED00       CHECK FOR CARD ED00             88702670
0044 0  4820            BSC     Z           SKIP IF PROPER CARD            88702680
0045 0  70F0            MDX     W3501       BRANCH ON WRONG SEQUENCE       88702690
0046 0  0017            STO     EOSW        CLEAR EDIT SWITCH             88702700
0047 0  6303            LDX  3  3           SET WORD INDEX              88702710
                ******************************************                     88702720
```

```
0048              ORG    72        CARD 3
         ****************************************
0048 00 C7000450  LD     L3 OUT+2    PLACE CONVERTED EDIT
004A 00 D70001FF  STD    L3 EOWD-1   *WDS IN SAVE LOCATNS
004C 0  73FF       MDX    3 -1       SKIP WHEN DONE
004D 0  70FA       MDX    *-6        CONTINUE SAVE OP
004E 0  700A       MDX    EDIT1-1    GO READ NEXT CARD
004F 00 C400004F EDIT3 LD L OUT+I    PICK UP 2ND EDIT ETY
0051 0  FOCE       EOR    KFFFF      CHECK FOR TERMINATOR
0052 0  4820       BSC    Z          SKIP IF TERM CARD
0053 0  70E2       MDX    W3501      BRANCH  NOT TERM CARD
0054 0  7034       MDX    INT
0055 D  3502 W3502 OC     /3502      1442 NOT READY
0056 0  70C0       MDX    EDIT       TRY AGAIN
0057 D  3503 W3503 OC     /3503      DSW INDICATES ERROR
005B D  70CB       MDX    EDIT       TRY FOR REREAD
0059 0  E000 KE000 OC     /E000      CONSTANT
*
005A    0000       BSS  E 0
005A 0  03E8 REDD OC      IN
005C 0  1600       OC     /1600      1442 READ IOCC
005D 0  D200 DSW1  OC     /0200      1442 SENSE/RESET
005D 0  1703       OC     /1703      *DSW IOCC
005E 0  0000       OC     0          EDIT SWITCH
*
*        THIS ROUTINE CONVERTS 1 HEXIDECIMAL
*        CARD TO BINARY.
*
005F 0  6IE1 H8CV  LDX    1 -31      SET XR TD CONV.30 WD
0060 0  1010       SLA    16         CLEAR CONVERTED WORD
0061 0  D024       STO    LOC        *STORE POINTER
0062 0  6204 H8CV1 LDX    2 4        SET COLUMN XR = 4
0063 0  7101       MDX    1 1        SKIP WHEN DONE
0064 0  7001       MDX    *+1        CONVERT A WORD
0065 0  7003       MDX    EDIT2+1    CONTINUE MAINLINE
0066 0  1010       SLA    16         CLEAR CONVERSION
0067 0  D01F       STO    SAVE       *WORK LOCATIONS.
0068 0  D01F       STO    SAVE1      *
0069 0  1004 H8CV2 SLA    4          POSITION FOR NXT CHR
006A 0  C010       STO    SAVE1      SAVE CONVERTED CHARS
006B D  630D       LDX    3 0        SET CHARAC XR = 0
006C              ORG    108        CARD 4
         ****************************************
006C 00 C5000407  LD     L1 IN+31    PICK UP HEX COLUMN
006E D  4828       BSC    +Z         SKIP IF NOT ALPHA
006F D  7309       MDX    3 9        ADD 9 FOR ALPHA CHAR
0070 D  1003       SLA    3          REMOVE ZONE BITS
0071 0D 4C180078   BSC  L HBCV4,+-   XFER IF CHAR = 0
0073 0  7301 H8CV3 MDX    3 1        ADD 1 TO CHARACT XR
0074 00 4C280078   BSC  L HBCV4,+Z   XFER IF DIGIT FOUND
0076 0  1001       SLA    1          POSITION NEXT BIT
0077 D  70FB       MDX    HBCV3      CHECK NEXT BIT
0078 0  6B0E H8CV4 STX    3 SAVE     STORE BIN CHARACTER
0079 0  C0C0       LD     SAVE       FETCH BIN CHARACTER
007A D  EB00 H8CV5 OR     SAVE1      ADD TO PREVIOUS CHAR
007B 0  7101       MDX    1 1        ADD 1 TO HEX WORD XR
007C D  72FF       MDX    2 -1       SUB 1 FROM COLUMN XR
007D D  70E0       MDX    HBCV2      GO FOR NEXT COLUMN
007E 00 67800086   LDX    I3 LOC     PICK UP STORE POINTR
0080 0  1000       NOP
0081 00 D700044E   STD    L3 OUT     SET IN OUTPUT AREA
0083 0  74010086   MDX    L LDC,I    ADD I TO POINTER
0085 0  7CDC       MDX    HBCV1      GO FOR NEXT WORD
0086 D  000D LDC   DC     D          STORAGE POINTER
0087 D  000D SAVE  OC     D          *CONVERSION WORK
0088 D  0000 SAVE1 DC     D          *LOCATIONS
```

```
*        THIS ROUTINE BUILDS THE DISK COMMANDS,
*        DETERMINES IF THE CE PACK IS BEING USED
*        AND IF THE CE PACK IS GOOD.
*
0089 DD C40D02D2 INT  LD  L EDWD+2   GET OUTPUT DEVICE IN D
008B D  0031      STD    USTB+7      SET IN USE TABLE
008C 00 C4000200  LD   L EDWD        GET HISTORY CYLINDER
008E 0  0020      STO    USTB+6      SAVE IN USE TABLE
008F 0  1BD3      SRA    3           REMOVE SECTOR BITS
0090             ORG   144           CARD 5
         ****************************************
0090 00 D400026A  STO  L DSK         SET IN SEEK COMMAND
0092 00 630B      LDX    3 11        SET BUILD INDEX
0093 00 C4000201 INT1 LD L EDWD+1    PICKUP DISK AREA CD
0095 00 EF000264  OR     L3 HOME     ADD AREA CODE TO
0097 00 D7000264  STO    L3 HOME     *DISK IDCC
0099 D  73FE      MDX    3 -2        SKIP WHEN DONE
009A D  70F8      MDX    INT1        CONTINUE
009B 00 44000203 INT2 BSI L HM       GO SEEK HM
009C 00 44000216 INT3 BSI L SEEK     SEEK TO HISTORY TRK
009F 00 44000225  BSI  L READ        READ HISTORY TRACK
00A1 00 C400044E  LD   L IDA+2       PICK UP CE WORD LOC
00A3 0  FODE      EOR    CK          CHECK FOR CE PACK
00A4 00 4C1800A8  BSC  L INT4,+-     BRANCH IF CE WORD
00A6 0  3504      DC     /3504       CE WORD NOT READ
00A7 0  70F3      MDX    INT2        TRY AGAIN
00AB 00 C400044F INT4 LD L IDA+3     GET BAD CYL COUNT
00AA 0  F008      EOR    CK1         CHECK FOR MORE THAN
00AB 00 4C1000BE  BSC  L INT5,-      *3 BAD CYLINDRS
00AD 0  3505      DC     /3505       4 OR MORE BAD CYLS
00AE D  08D5 W3505 XID   SNSW        SENSE SWITCH INPUT
00AF 00 4C28D0BE  BSC  L INT5,+Z     IF SSO USE BAD PACK
00B1 0  70F6      MDX    INT4
00B2 0  CE0C CK   OC     /CEDC
00B3 D  0018 CK1  DC     24
         ****************************************
00B4             ORG   1BO           CARD 6
         ****************************************
00B4    0000      BSS  E 0
00B4 0  0030 SNSW DC     /0030       SENSE S/P SWITCH
00B5 D  D760      OC     /0760       *ICCC
*
*        THIS SECTION ASSIGNS THE DOM CYLINDERS
*
00B6 D  0000 USTB OC     0           HEADER/LDR CYLINDER
00B7 0  D000      OC     0           DOM LDR/ORG CYLINDER
00B8 D  000D      DC     0           DOM SEL/EXC CYLINDER
00B9 0  0000      DC     0           WORK CYLINDER
00BA 0  000D      OC     0           WORK CYLINDER
00BB D  000D      OC     0           LOC-DIR - EDIT TABLE
00BC D  00DD      DC     0           HISTORY TRACK
00BD D  0000      OC     0           OUTPUT DEVICE
*
00BE D  62FA INT5 LDX    2 -6        SET TABLE XF
00BF D  C0F4      LD     SNSW        PICKUP CYL 6 ADDRESS
00C0 DD 6780044F INT6 LDX I3 SIO+2   SET ERROR TABLE XR
00C2 D  730D      MDX    3 0         SKIP IF ERROR XR = 0
00C3 0  7CD7      MDX    INT9        GO CHECK FOR GODD CY
00C4 DD 060000BC INT7 STD L2 USTB+6  SET CYL NMBR IN TBL
00C6 D  7201      MDX    2 1         ADD 1 TO TABLE XR
00C7 D  7001      MDX    *+1         CONTINUE
00C8 0  7D0B      MDX    GEN         GD TO NEXT SECTION
00C9 0  B009 INT8 A      KB          ADD 8 TO CYLINDER XR
00CA 0  7DF5      MDX    INT6        CHECK NEXT CYLINDER
00CB DD B7D0D44F INT9 CMP L3 SIO+2   COMPARE WITH ERR CYL
00CD D  7002      MDX    INT10       OK
00CE 0  7DD1      MDX    INT10       OK
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DOCF 0  70F9          MDX    INT8        CONTINUE CHECK          88704090
0000 0  73FF   INT10  MDX    3 -1        DECREMENT ERR XR        88704100
0001 0  70F9          MDX    INT9        CHECK NEXT ERR ENTRY    88704110
0002 0  70F1          MDX    INT7        CHECK NEXT CYLINDER     88704120
0003 0  0008   K8     DC     8           CONSTANT 8              88704130
                      *                                          88704140
                      *    THE FOLLOWING SECTIONS WILL INPUT THE 88704150
                      *    ODM AND WRITE IT ON THE DISK.         88704160
                      *                                          88704170
0004 00 44000203 GEN  BSI  L  HM         GO SEEK HOME            88704180
0006 0  C00F          LD     UST8        PICKUP 1ST CYLINDER     88704190
0007 0  1803          SRA    3           REMOVE SECTOR BITS      88704200
             **************************************************  88704210
0008                  ORG    216         CARD 7                  88704220
             **************************************************  88704230
0008 00 0400026A      STO  L  DSK        SET IN SEEK COMMAND     88704240
000A 00 44000216      BSI  L  SEEK       GO SEEK TO DES. CYL.    88704250
000C 0  6300   GEN1   LDX    3 0         INITIALIZE CARD         88704260
000D 0  6B4A          STX    3 CDC       *COUNT INDICATOR        88704270
000E 0  6100          LDX    1 0         SET OUTPUT AREA XR      88704280
000F 0  7056   GEN3   MDX    RDCD        GO READ A CARD          88704290
00E0 0  CC49          LD     LCD         PICK UP LAST CARD SW    88704300
00E1 00 4C2001BF      BSC  L  LAST,Z     BRANCH IF CN            88704310
00E3 0  706B          MDX    PACK        GO PACK BINARY DATA     88704320
00E4 0  C043          LD     CDC         PICK UP CARD COUNT      88704330
00E5 00 4C2000EA      BSC  L  GEN4,Z     BRANCH IF NOT 1ST CD    88704340
00E7 00 74010128      MDX  L  CDC,1      ADD 1 TO CD COUNT       88704350
00E9 0  70F5          MDX    GEN3        IGNORE HEADER CD        88704360
00EA 00 7400C129 GEN4 MDX  L  ADRS,0     SKIP IF NO DATA IN      88704370
00EC 0  7035          MDX    ENOCK       BRANCH TO END CD CK     88704380
00ED 00 4C000270      BSC  L  CKAD       BRANCH TO CHECK ADRS    88704390
00EF 0  0039   GEN9   STO    ADRS        SAVE CARD ADRS          88704400
00F0 0  C03A          LD     SCIO        PICK UP SECTION ID      88704410
00F1 00 4C1800FC      BSC  L  GEN6,+-    BRANCH IF SECTION 1     88704420
00F3 0  630B          LDX    3 11        TRANSFER USE TABLE      88704430
00F4 0  62F8          LDX    2 -8        *TO PROGRAM SECTION     88704440
00F5 00 C600008E GEN5 LD   L2 USTB+8     *                       88704450
00F7 00 070003E8      STO  L3 IN         *                       88704460
00F9 0  7301          MDX    3 1         *                       88704470
00FA 0  7201          MDX    2 1         *SKIP WHEN 8 WDS XF     88704480
00F8 0  70F9          MDX    GEN5        *                       88704490
             **************************************************  88704500
00FC                  ORG    252         CARD 8                  88704510
             **************************************************  88704520
00FC 0  1010   GEN6   SLA    16          CLEAR ZEROS SWITCH      88704530
00FD 0  002E          STO    ZERO        *                       88704540
00FE 00 C40003E8      LD   L  IN         PICK UP CARD ADDRESS    88704550
0100 0  F028          EOR    ADRS        CHECK IF EXPECTED       88704560
0101 00 4C20011F      BSC  L  FILL,Z     BRANCH IF NOT EXPECT    88704570
0103 00 C40003EA      LD   L  IN+2       PICK UP CARD WD CNT     88704580
0105 0  E02A          AND    RSN         SAVE WORD COUNT BITS    88704590
0106 00 040003EA      STO  L  IN+2       RESTORE TO DFG LCC      88704600
0108 00 678003EA      LDX  13 IN+2       CARD WORD COUNT XR      88704610
010A 0  6209          LDX    2 9         SET INPUT DATA XR       88704620
010B 00 C60003E8 GEN7 LD   L2 IN         MOVE DATA FROM INPUT    88704630
010D 00 0500044E      STO  L1 OUT        TO OUTPUT AREA          88704640
010F 00 74010129 GEN8 MDX  L  ADRS,1     ADD 1 TO ADDRS INDC     88704650
0111 0  7101          MDX    1 1         ADD 1 TO OUTPUT XR      88704660
0112 0  7201          MDX    2 1         ADD 1 TO INPUT DT XR    88704670
0113 00 7401012F      MDX  L  WDCT,1     ADD 1 TO WORD CCUNTR    88704680
0115 D  C019          LD     WDCT        PICK UP WORD COUNT      88704690
0116 0  F016          EOR    K320        CHECK FOR 320 WORDS     88704700
0117 00 441801A5      BSI  L  WRITE,+-   WRITE DISK IF WC 320    88704710
0119 00 7400012C      MDX  L  ZERO,0     SKIP IF ZERO SW OFF     88704720
011B 0  70E0          MDX    GEN6        GO CHECK NEXT ADDRS     88704730
011C 0  73FF          MDX    3 -1        SKIP IF ALL WORDS       88704740
011D 0  70E0          MDX    GEN7        GO MOVE NEXT WORD       88704750
011E 0  70C8          MDX    GEN4-3      GO READ NEXT CARD       88704760
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011F 0  680C   FILL   STX    ZERO        SET ZEROS SWITCH        88704770
             **************************************************  88704780
0120                  ORG    288         CARD 9                  88704790
             **************************************************  88704800
0120 0  1010          SLA    16          CLEAR A REG             88704810
0121 0  70EB          MDX    GEN7+2      FILL OA WITH ZERO       88704820
0122 00 C40003EA ENOCK LD  L  IN+2       PICK UP WORD CNT LOC    88704830
0124 0  F009          EOR    KOF00       CHECK FOR END CARD      88704840
0125 00 4C180179      BSC  L  ENG,+-     BRANCH IF END CARD      88704850
0127 0  7004          MDX    GEN6        CONTINUE                88704860
0128 0  0000   CDC    DC     0           CARD COUNTER            88704870
0129 0  0000   ADRS   DC     0           ADDRESS INDICATOR       88704880
012A 0  0000   LCD    DC     0           LAST CARD INDICATOR     88704890
012B 0  0000   SCIO   DC     0           SECTION ID              88704900
012C 0  0000   ZERO   DC     0           ZERO FILL INDICATOR     88704910
012D 0  0140   K320   DC     /0140       CONSTANT                88704920
012E 0  0F00   KOF00  DC     /0F00       CONSTANT HEX 0F00       88704930
012F 0  0000   WDCT   DC     0           OUTPUT AREA WD CNTR     88704940
0130          0 BSS  E  0                                        88704950
0130 0  003F   RSN    DC     /003F       SENSE 1442 IOCC         88704960
0131 0  1700          DC     /1700                               88704970
0132 0  03E8   RD     DC     IN          READ 1442 IOCC          88704980
0133 0  1600          DC     /160D                               88704990
0134 0  0001   RESN   DC     1           RESET/SENSE IOCC        88705000
0135 0  1703          DC     /1703                               88705010
                      *                                          88705020
                      *    THIS ROUTINE READS THE ODM OBJECT CARDS 88705030
                      *                                          88705040
0136 0  08F9   RDCD   XIO    RSN         SENSE STATUS            88705050
0137 00 4C040146      BSC  L  W3506,E    BRANCH IF NOT READY     88705060
0139 0  08F8          XIO    RD          READ A CARD             88705070
013A 0  08F5   RDCD1  XIO    RSN         SENSE STATUS            88705080
013B 0  1801          SRA    1           POSITION                88705090
013C 00 4C04013A      BSC  L  RDCD1,E    SPIN WHILE BUSY         88705100
013E 0  1808          SRA    8           POSITION                88705110
013F 00 4C04014A      BSC  L  LST,E      BRANCH IF LAST CARD     88705120
0141 0  1801   RDCD2  SRA    1           POSITION                88705130
0142 00 4C040148      BSC  L  W3507,E    BRANCH IF ERROR         88705140
             **************************************************  88705150
0144                  ORG    324         CARD 10                 88705160
             **************************************************  88705170
0144 0  08EF          XIO    RESN        RESET DSW               88705180
0145 0  709A          MDX    GEN3+1      EXIT                    88705190
0146 0  3506   W3506  DC     /3506       1442 NOT READY          88705200
0147 0  70EE          MDX    RDCD        TRY AGAIN               88705210
0148 0  3507   W3507  DC     /3507       DSW INDICATES ERROR     88705220
0149 0  70EC          MDX    RDCD        TRY AGAIN               88705230
014A 0  680F   LST    STX    LCD         SET LAST CARD SWITCH    88705240
0148 0  70F5          MDX    RDCD2       CONTINUE                88705250
                      *                                          88705260
                      *    THIS ROUTINE PACKS BINARY 12-4 DATA   88705270
                      *                                          88705280
014C 0  6924   PACK   STX    1 PACK4+1   SAVE INDEX 1            88705290
014D 0  61B8          LDX    1 -72       SET UP WORD INDEX       88705300
014E 0  6300          LDX    3 0         SET UP STORE INDEX      88705310
014F 0  62F0   PACK1  LDX    2 -3        SET UP SHIFT INDEX      88705320
0150 0  C6000177 PACK2 LD   L2 SHIFT+3   PICK UP SHIFT INSTRN    88705330
0152 0  DDD6          STO    PACK3       SET IN ROUTINE          88705340
0153 00 C5000431      LD   L1 IN+73      PICK UP 2ND HALF WD     88705350
0155 0  1800          RTE    16          SET IN G REG.           88705360
0156 00 C5000430      LD   L1 IN+72      PICK UP 1ST HALF WD     88705370
0158 0  1804          SRA    4           POSITION                88705380
0159 0  1000   PACK3  SLA    0           PACK A AND Q            88705390
015A 00 D70003E8      STO  L3 IN         STORE CONVERTED WD      88705400
015C 0  7301          MDX    3 1         MODIFY STORE INDEX      88705410
015D 0  7101          MDX    1 1         MODIFY WORD INDEX       88705420
015E 0  7201          MDX    2 1         MODIFY SHIFT INDEX      88705430
015F 0  70F0          MDX    PACK2       GO CONVERT NXT WORD     88705440
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C160 0  7101         MDX   1 1         MODIFY FOR NXT GROUP    8B705450
0161 0  70E0         MDX   PACK1       GO CONVERT NXT GROUP    8B705460
                  *                                            8B705470
                  *   THIS ROUTINE PERFORMS THE CHECKSUM       8B705480
                  *                                            8B705490
0162 0  62CA         LDX   2 -54       SET DATA INDEX          8B705500
0163 0  C0C4         LD    CDC         GET CARD COUNT          8B705510
0164 00 8600041E  SUM  A   L2 IN+54    SUM DATA WORD           8B705520
0166 0  4802         BSC   C           SKIP ON CARRY          8B705530
0167 0  80CC         A     RESN        ADD 1                   8B705540
0168              ****************************************     8B705550
                     ORG   360         CARD 11                 8B705560
                  ****************************************     8B705570
0168 0  7201         MDX   2 1         SKIP WHEN DONE          8B705570
0169 0  70FA         MDX   SUM         CONTINUE               8B705580
016A 0  80C9         A     RESN        ADD 1                   8B705590
016B 00 4C1B0170     BSC   L PACK4,←   BRANCH IF CHECKSUM OK   8B705600
016D 0  3508      W3508 DC  /3508      CHECKSUM ERROR          8B705610
016E 00 4C00000DF    BSC   L GEN3      GO REREAD CARD          8B705620
0170 00 65000000  PACK4 LDX  L1 0      RESTORE INDEX 1         8B705630
0172 00 4C0000E4     BSC   L GEN3+5    RETURN TO MAIN LINE     8B705640
0174 00 1084      SHIFT SLT  4         SHIFT 4                 8B705650
0175 0  1088         SLT   8           SHIFT 8                 8B705660
0176 0  108C         SLT   12          SHIFT 12                8B705670
                  *                                            8B705680
                  *   THIS SECTION SERVICES THE END CARD       8B705690
                  *                                            8B705700
0177 0  FFF0      KFFF0 DC  /FFF0      CONSTANT                8B705710
0178 0  0003      K3    DC  3          CONSTANT 3              8B705720
0179 0  7100      END   MDX  1 0       SKIP IF NO DATA TO WRITE 8B705730
017A 0  402A         BSI   WRITE       GO WRITE DISK           8B705740
017B 0  1010         SLA   16          CLEAR ACC               8B705750
017C 0  D0AC         STD   ADRS        CLEAR LOC ADRS          8B705760
017D 00 7400012B     MDX   L SCID,0    SKIP IF SECTION 1       8B705770
017F 0  7003         MDX   END1                                8B705780
0180 00 74FF01A4     MDX   L TEST,-1   SKIP IF ALL H-TESTS     8B705790
0182 0  700A         MDX   END2                                8B705800
0183 0  C0A7      END1  LD   SCID      PICKUP SECTION ID       8B705810
0184 0  F0F3         EOR   K3          CHECK FOR SECT 3        8B705820
0185 00 4C1801BF     BSC   L LAST,+←   BRANCH IF 4TH SECT      8B705830
0187 00 7401012B     MDX   L SCID,1    ADD 1 TO SECT IND       8B705840
0189 0  C0A1         LD    SCID        PICKUP SECT IND         8B705850
018A 0  18G1         SRA   1           CHECK FOR SECTION 1     8B705860
018B 0  4820         BSC   Z           SKIP IF SECTION 1       8B705870
                  ****************************************     8B705880
                     ORG   396         CARD 12                 8B705890
                  ****************************************     8B705900
018C 0  7002         MDX   END3        BRANCH IF NOT SEC 1     8B705910
018D 0D 4C00000C  END2  BSC  L GEN1    GO INPUT NXT SECTION    8B705920
018F 00 740101A1  END3  MDX  L REF,1   INCR TABLE REF          8B705930
0191 00 678001A1     LDX   I3 REF      SET XR = REF.           8B705940
0193 00 C7000086     LD    L3 USTB     PICK UP NEXT CYL        8B705950
0195 00 970000B5     S     I3 USTB-1   SUB PREVIOUS CYL        8B705960
0197 0  1803         SRA   3           REMOVE SECTOR BITS      8B705970
0198 00 0400026A     STD   L DSK       SET SEEK COUNT          8B705980
019A 0  407B         BSI   SEFK        SEEK TO NEXT CYLINDR    8B705990
019C 00 C4000269     LD    L DWRT+1    ZERO WRITE IOCC         8B706000
019D 0  E0D9         AND   KFFF0       *SECTOR COUNT           8B706010
019E 00 0400026D     STD   L DWPT+1    *                       8B706020
01A0 U  70EC         MDX   END2        EXIT                    8B706030
                  *                                            8B706040
01A1 0  0000      REF   DC  0          USE TABLE REFERENCE     8B706050
01A2 0  0007      K7    DC  7          CONSTANT                8B706060
01A3 0  0141      K321  DC  321        WRT/RD CONSTANT         8B706070
01A4 0  0007      TEST  DC  7          NUMBER OF HEADER TESTS  8B706080
                  *                                            8B706090
                  *   THIS ROUTINE SETUPS TO WRITE A DISK      8B706100
                  *   RECORD.                                  8B706110
                  *                                            8B706120
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                  *                                            8B706130
01A5 0  0000      WRITE DC  0          ENTRY POINT             8B706140
01A6 0  6101         LDX   1 1         SET UP FOR 1 WORD       8B706150
01A7 00 6D30044C     STX   L1 IDA      * DISK READ             8B706160
01A9 00 C4000269     LD    L OWRT+1    SETUP THE DISK READ     8B706170
01AB 0  1883         SRT   3           *IOCC TO READ THE       8B706180
01AC 00 C40D0247     LD    L DRD+1     *SECTOR ID OF THE       8B706190
01AE 0  1803         SRA   3           *SECTOR TO BE WRITN     8B706200
01AF C  1083         SLT   3           *                       8B706210
                  ****************************************     8B706220
                     ORG   432         CARD 13                 8B706230
                  ****************************************     8B706240
0180 00 04000267     STO   L DRD+1     *                       8B706250
0182 0  4072         BSI   READ        GO READ DISK SID        8B706260
0183 0  C0EF         LD    K321        SET UP WORD COUNT       8B706270
0184 00 0400044C     STO   L IDA       *FOR WRITE TABLE        8B706280
0186 00 4400023F     BSI   L WRIT      GO WRITE THE DISK       8B706290
0188 00 74010269     MDX   L OWRT+1,1  ADD 1 TO SECTOR CNT     8B706300
01BA 0  6100         LDX   1 0         SET OUTPUT AREA XR      8B706310
01BB 00 6D00012F     STX   L1 WDCT     CLEAR OUTPUT WC         8B706320
01BD 0D 4C8001A5     BSC   I WRITE     EXIT SUBROUTINE         8B706330
                  *                                            8B706340
                  *   THE FOLLOWING ROUTINES ARE PERFORMED ON  8B706350
                  *   COMPLETION OF WRITING DIMAL ON DISK.     8B706360
                  *                                            8B706370
01BF 0  1010      LAST  SLA  16        CLEAR ACC               8B706380
01C0 00 D4D0012A     STD   L LCD       CLEAR LAST CARD SW      8B706390
01C2 00 C400012B     LD    L SCID      PICKUP SECT IND         8B706400
01C4 0  F0B3         EOR   K3          CHECK FOR 4TH SECT      8B706410
01C5 00 4C180291     BSC   L CKPT,←    BRANCH IF 4TH SECTOR    8B706420
01C7 0  3509      W3509 DC  /3509      DIMAL NOT ALL LOADED    8B706430
01C8 00 4C00000C     BSC   L GEN1      CONTINUE INPUT          8B706440
01CA 0  4038      LAST1 BSI  HM        SEEK TO HOME            8B706450
                  *                                            8B706460
                  *   THIS ROUTINE WRITES THE MAINTENANCE      8B706470
                  *   PACK ID (ABCO) ON THE HISTORY TRACK.     8B706480
                  *                                            8B706490
01CB 00 C40000BC     LDC   L USTB+6    PICKUP SECTOR ADDRS     8B706500
01CD 0  1803         SRA   3           REMOVE SECTOR BITS      8B706510
01CE 00 D400026A     STO   L DSK       SET IN SEEK IOCC        8B706520
01D0 0  4045         BSI   SEEK        GO SEEK TO HIST TRAK    8B706530
01D1 00 C4000267     LD    L DRD+1     SET READ IOCC FOR       8B706540
0103 0  F0A3         AND   KFFF0       *SECTOR 0               8B706550
                  ****************************************     8B706560
                     ORG   468         CARD 14                 8B706570
                  ****************************************     8B706580
01D4 00 D4000267     STO   L DRD+1     *                       8B706590
01D6 0  6303         LDX   3 3         SET WORD COUNT TO 3     8B706600
01D7 00 6F00044C     STX   L3 IDA      *                       8B706610
01D9 00 C4000269     LD    L OWRT+1    SET DISK WRITE IOCC     8B706620
01DB 0  E09B         ANO   KFFF0       *FOR SECTOR 0           8B706630
01DC 00 D4000269     STO   L OWRT+1    *                       8B706640
01DE 0  4046         BSI   READ        READ HIST TRK SEC 0     8B706650
01DF 00 6700ABCD     LDX   L3 /ABCD    SET MAINT. PACK ID      8B706660
01E1 00 6F00044E     STX   L3 OUT      *IN OUTPUT AREA         8B706670
01E3 00 C40000BB     LD    L USTB+5    GET LAST USED CYL       8B706680
01E5 00 0400044F     STO   L OUT+2     SET IN OUTPUT AREA      8B706690
01E7 0D 4400023F     BSI   L WRIT      WRITE ID ON HIST TRK    8B706700
                  *                                            8B706710
                  *   THIS ROUTINE WILL INPUT THE LOADER,      8B706720
                  *   WHICH IN TURN INPUTS THE DOM LOADER      8B706730
                  *   ORGANIZER PROGRAM                        8B706740
                  *                                            8B706750
01E9 0  4019      LD    BSI   HM        SEEK TO HOME           8B706760
01EA 00 C4000086     LD    L USTB      PICKUP LOADER CYL A0    8B706770
01EC D  1803         SRA   3           REMOVE SECTOR BITS      8B706780
01ED 0  D07C         STO   DSK         SET IN SEEK COMMAND     8B706790
01EE 0  4D27         BSI   SEEK        SEEK TO LOADER CYL      8B706800
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01EF 00 670000AA        LDX  L3  /0DAA      SET XR = INPUT ADDRS      88706810
01F1 0  6BT4            STX  3   DRD         SET ADRS IN READ CMD      88706820
01F2 0  C0B0            LD       K32I        PICKUP RD WORD COUNT      88706830
01F3 0  D300            STO  3   0           SET IN LOC HEX 00AA       88706840
01F4 0  C072            LD       DRD+1       PICKUP READ COMMAND       88706850
01F5 0  E8AC            OR       K7          SET SECTOR BITS = 7       88706860
01F6 0  D070            STO      DRD+1       RESTORE READ COMMAND      88706870
01F7 0  4020            BSI      READ        GO INPUT LOADER           88706880
                        ***************************************       88706890
01F8                    ORG      504         CARD 15                   88706900
                        ***************************************       88706910
01F8 0  1010            SLA      16          SETUP INIT LDR CALL       88706920
01F9 00 D400000C        STO  L   /C          SET IN LOC HEX C          88706930
01FB 0  C005            LD       EDWD+1      PICKUP DRIVE A.C.         88706940
01FC 00 D4000000        STO  L   /D          SET IN LOC HEX D          88706950
01FE 00 4C000DAD        BSC  L   /0DAD       BRANCH TO LOADER          88706960
0200 0  0000     EDWD   DC   0               CE HISTORY TRACK          88706970
0201 0  0000            DC   0               DRIVE AREA CODE           88706980
0202 0  0000            DC   0               OUTPUT DEVICE             88706990
                 *                                                     88707000
                 *      THIS ROUTINE SEEKS THE 2310 TO ITS             88707010
                 *      HOME POSITION                                  88707020
                 *                                                     88707030
0203 0  0000     HM     DC   0               ENTRY POINT               88707040
0204 0  6304            LDX  3   4           SET TRY INDEX             88707050
0205 0  0868     HM1    XIO      DSNSR       SENSE/RESET STATUS        88707060
0206 0  D00E            STO      SKST        SAVE STATUS               88707070
0207 0  1004            SLA      4           POSITION HOME BIT         88707080
0208 00 4CA80203        BSC  I   HM,+Z       EXIT IF DISK HOME         88707090
020A 0  73FF            MDX  3  -1           SKIP IF 3RD TRY           88707100
020B 0  7103            MDX      HM2         GO ISSUE SEEK CMND        88707110
020C 0  C008            LD       SKST        RETRIEVE LAST DSW         88707120
020D 0  7003     W350A  OC       /350A       SEEK HOME ERROR           88707130
020E 0  70F5            MDX      HM1+1       TRY AGAIN                 88707140
020F 0  0854     HM2    XIO      HOME        SEEK TO HOME              88707150
0210 0  085B            XIO      DSNS        SENSE DISK STATUS         88707160
0211 0  1001            SLA      1           POSITION OP CP BIT        88707170
0212 00 4C180210        BSC  L   HM2+1,-     BRANCH IF NOT DONE        88707180
0214 0  70F0            MDX      HM1         GO CHECK HOME BIT         88707190
                 *                                                     88707200
0215 0  0000     SKST   DC   0               SEEK DSW SAVE LOC         88707210
                 *                                                     88707220
                 *      THIS ROUTINE SEEKS 2310 TO DESIRED CYL         88707230
                 *                                                     88707240
0216 0  0000     SEEK   DC   0               ENTRY POINT               88707250
0217 0  0854            XIO      DSNS        SENSE DISK STATUS         88707260
0218 0  1002            SLA      2           POSITION DSW              88707270
0219 00 4C10021D        BSC  L   SEEK1,-     BRANCH ON READY           88707280
021B 0  350B     W350B  DC       /350B       DISK NOT READY            88707290
                        ***************************************       88707300
021C                    ORG      540         CARD 16                   88707315
                        ***************************************       88707320
021C 0  70FA            MDX      SEEK+1      TRY AGAIN                 88707330
021D 0  084C     SEEK1  XIO      DSK         SEEK DISK                 88707340
021E 0  084D            XIO      DSNS        SENSE STATUS              88707350
021F 0  1001            SLA      1           POSITION DSW              88707360
0220 00 4C10021E        BSC  L   SEEK1+1,-   BRANCH TILL DONE          88707370
0222 0  084B            XIO      DSNSR       RESET DSW                 88707380
0223 00 4C800216        BSC  I   SEEK        EXIT                      88707390
                 *                                                     88707400
                 *      THIS ROUTINE READS THE DISK                    88707410
                 *                                                     88707420
0225 0  0000     READ   DC   0               ENTRY POINT               88707430
0226 0  6B15            STX  3   READ2+1     SAVE INDEX REG 3          88707440
0227 0  6303            LDX  3   3           SET UP TRY COUNTER        88707450
0228 0  0843            XIO      DSNS        SENSE DISK STATUS         88707460
0229 0  1002            SLA      2           POSITION DSW              88707470
022A 00 4C10022E        BSC  L   READ1,-     BRANCH ON READY           88707480
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022C 0  350C     W350C  DC       /350C       DISK NOT READY-READ      88707490
022D 0  70F9            MDX      READ+2      TRY AGAIN                 88707500
022E 0  0837     READ1  XIO      DRD         READ DISK                 88707510
022F 0  083C            XIO      DSNS        SENSE STATUS              88707520
0230 0  1001            SLA      1           POSITION DSW              88707530
0231 00 4C10022F        BSC  L   READ1+1,-   BRANCH TILL NOT BUSY     88707540
0233 0  083A            XIO      DSNSR       RESET DSW                 88707550
0234 0  E039            AND      DSNSR       CHECK FOR ERROR           88707560
0235 00 4C18023B        BSC  L   READ2,+-    BRANCH IF NO ERROR       88707570
0237 0  73FF            MDX  3  -1           SKIP IF 3 TRIES          88707580
0238 0  70EF            MDX      READ+3      TRY AGAIN                 88707590
0239 0  350D     W350D  DC       /350D       DISK READ ERROR          88707600
023A 0  70EC            MDX      READ+2      REPEAT                    88707610
023B 00 670000AA REA02  LDX  L3  0           RESTORE XR3              88707620
023D 00 4C800225        BSC  I   READ        RETURN TO USER           88707630
                 *                                                     88707640
                 *      THIS ROUTINE WRITES THE DISK AND PER-          88707650
                 *      FORMS A MODULO 4 CHECK                         88707660
                 *                                                     88707670
023F 0  0000     WRIT   DC   0               ENTRY POINT               88707680
                        ***************************************       88707690
0240                    ORG      576         CARD 17                   88707700
                        ***************************************       88707710
0240 0  082B            XIO      DSNS        SENSE DISK STATUS         88707720
0241 0  1002            SLA      2           POSITION DSW              88707730
0242 0  481C            BSC  -               SKIP IF NOT READY         88707740
0243 0  7002            MDX      WRIT1       OK CONTINUE               88707750
0244 0  350E     W350E  DC       /350E       DISK NOT READY-WRITE     88707760
0245 0  70FA            MDX      WRIT+1      TRY AGAIN                 88707770
0246 0  6103     WRIT1  LDX  1   3           SET TRY INDEX            88707780
0247 0  0820            XIO      DWRT        WRITE DISK                88707790
0248 0  0823            XIO      DSNS        SENSE STATUS              88707800
0249 0  1001            SLA      1           POSITION DSW              88707810
024A 00 4C100248        BSC  L   WRIT1+2,-   BRANCH TILL DONE          88707820
024C 0  0821            XIO      DSNSR       RESET DSW                 88707830
024D 0  E020            AND      DSNSR       CHECK FOR ERROR           88707840
024E 00 4C180254        BSC  L   WRIT2,+-    BRANCH IF NO ERROR       88707850
0250 0  71FF            MDX  1  -1           SKIP IF 3 TRIES          88707860
0251 0  70F5            MDX      WRIT1+1     TRY AGAIN                 88707870
0252 0  350F     W350F  DC       /350F       DISK WRT/MOD 4 ERROR     88707880
0253 0  70ED            MDX      WRIT+2      REPEAT                    88707890
0254 0  C014     WRIT2  LD       DWRT+1      SETUP MODULO 4 ICCC      88707900
0255 0  F016            EOR      DSNS                                  88707910
0256 0  D012            STO      DWRT+1      SET IN WRITE ICCC         88707920
0257 0  0810            XIO      DWRT        DO MODULO 4 CHECK         88707930
0258 0  0813            XIO      DSNS        SENSE STATUS              88707940
0259 0  1001            SLA      1           POSITION DSW              88707955
025A 00 4C100258        BSC  L   WRIT2+4,-   SPIN TILL NOT BUSY       88707960
025C 0  C00C            LD       DWRT+1      RESTORE WRITE IOCC       88707970
025D 0  F00E            EOR      DSNS                                  88707980
025E 0  D00A            STO      DWRT+1      SET IN IOCC               88707990
025F 0  080E            XIO      DSNSR       RESET DSW                 88708000
0260 0  E00D            AND      DSNSR       CHECK FOR ERROR           88708010
0261 00 4C98023F        BSC  I   WRIT,+-     RETURN TO USER IF OK     88708020
0263 0  70EC            MDX      W350F-2     ERROR - BRANCH            88708030
                 *                                                     88708040
                        ***************************************       88708050
0264                    ORG      612         CARD 18                   88708060
                        ***************************************       88708070
0264 0  0000            BSS  E   0                                     88708080
                 *                                                     88708090
0264 0  00CA     HOME   DC       202         SEEK HOME IOCC            88708100
0265 0  0404            DC       /0404                                 88708110
0266 0  044C     DRD    DC       IOA         READ DISK IOCC           88708120
0267 0  0603            DC       /0603                                 88708130
0268 0  044C     DWRT   DC       IOA         WRITE DISK IOCC          88708140
0269 0  0500            DC       /0500                                 88708150
026A 0  0000     DSK    DC       0           SEEK DISK IOCC           88708160
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026B 0  0400              DC      /0400                                    88708170
026C 0  0380      OSNS    DC      /0380          SENSE OISK ICCC           88708180
026D 0  0700              DC      /07C0                                    88708190
026E 0  8740      DSNSR   DC      /8740          SENSE/RESET OSK IOCC      88708200
026F 0  0701              DC      /0701                                    88708210
                  *                                                        88708220
0270 00 C40003E8  CKAD    LD    I IN             PICK UP STARTING ADR      88708230
0272 0  8009              CMP     K3000          CK ADRS FOR LEGAL         88708240
0273 0  7001              MDX     CKAD1          GREATER                   88708250
0274 0  7005_             MDX     CKAD2          AORS OK-LESS              88708260
0275 0  8007      CKAD1   CMP     K70FF          CK AORS FOR LEGAL         88708270
0276 0  7003              MOX     CKAD2          ADRS OK                   88708280
0277 0  1000              NOP     0                                        88708290
0278 00 4C0000E7          BSC   L GEN4-3         IGNORE CARD               88708300
027A 00 4C0000EF  CKAD2   BSC   L GEN9           ADRS IS OK-MOVE OATA      88708310
027C 0  3000      K3000   DC      /3000          AORS CK CONSTANTS         88708320
027D 0  70FF      K70FF   DC      /70FF          *                        88708330
                  *                                                        88708340
                  *       PROGRAM RESTART OPERATION.                      88708350
                  *                                                        88708360
027E 0  1010      RSTRT   SLA     16             CLEAR PROGRAM CONTRCL     88708370
027F 00 040001A1          STO   L REF            *SWITCHES                 88708380
0281 00 04000128          STO   L SCID           *                        88708390
0283 00 04000129          STO   L ADRS           *                        88708400
0285 00 0400012F          STO   L WDCT           *                        88708400
0287 0  C0E1              LD      OWRT+1         PICKUP WRITE CCMMANO      88708410
                  ********************************************            88708420
0288                      ORG     648            CARO 19                  88708430
                  ********************************************            88708440
0288 00 E4000177          AND   L KFFF0          SET SECTOR BITS TO 0     88708450
028A 0  B9DE              STO     OWRT+1         REPLACE COMMAND          88708460
028B 00 C40001A2          LD    L K7             GET CONSTANT 7           88708470
028D 00 040001A4          STO   L TEST           SET IN HEADER TEST SW    88708480
028F 00 4C000004          BSC   L GEN            GO INPUT DIMAL           88708490
0291 0  0808      CKPT    XIO     OESW           CK FOR PT LOAD FROM CARO 88708500
0292 00 F4000020          EOR   L KFFFF          PT IF SWS = FFFF         88708510
0294 00 4C2001CA          BSC   L LAST1,Z        BRANCH IF CARO LOAD      88708520
0296 00 44000203          BSI   L HM             RETURN ARM TO HCME       88708530
0298 0  3510      W3510   DC      /3510          PT DIMAL LOADEO          88708540
0299 0  70FE              MDX     W3510          ENO OF PT LOAD TRAP      88708550
029A 0  0000              BSS   E 0                                       88708560
029A 0  0000      OESW    DC      0              SENSE DE SWITCHES ICCC   88708570
0298 0  0740              DC      /0740                                   88708580
C29C    0000              ENO     0                                       88708590
                                                 8870859 68708600
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CROSS REFERENCE LISTING

SYMBOL	VALUE	REFERENCES
AORS	0129	00EA,00EF,0100,010F,017C,0283
8RN	0018	0015
COC	0128	D00D,00E4,00E7,0163
COCT	001E	0009
CK	0082	00A3
CKAD	0270	00ED
CKAD1	0275	0273
CKAO2	027A	0274,0276
CKPT	0291	01C5
CK1	0083	00AA
DESW	029A	0291
ORD	0266	01AC,0180,01D1,0104,01F1,01F4,01F6,022E
OSK	026A	0090,00C8,0198,01CE,01ED,0210
OSNS	026C	0210,0217,021E,0228,022F,0240,0248,0255,0258,0250
DSNSR	026E	0205,0222,0233,0234,024C,024D,025F,0260
OSW	001C	0001,0004,0024,002A
OSW1	005C	0031,003B
OWRT	0268	0198,019E,01A9,0188,0109,01DC,0247,0254,0256,0257,
		025C,025E,0287,028A
ED1T	0024	0017,0037,0056,0058
E01T1	002A	002C,004E
E0IT2	L038	0034,0065
EDIT3	004F	0040
EDSW	005E	0028,003E,0046
EDWD	0200	004A,0089,008C,0093,01F8
ENO	0179	0125
ENOCK	0122	00EC
END1	0183	017F
END2	0180	0182,01A0
ENO3	018F	018C
FILL	011F	0101
GEN	0004	00C8,028F
GENI	00DC	0180-01C8
GEN3	00DF	00E9,0145,016E,0172
GEN4	00EA	00E5,011E,0278
GEN5	00F5	00F8
GEN6	00FC	00F1,0118,0127
GEN7	0108	011D,0121
GEN8	010F	
GEN9	00EF	027A
H8CV	005F	0038
H8CV1	0062	0085
H8CV2	0069	0070
H8CV3	0073	0077
H8CV4	0078	0071,0074
H8CV5	007A	
HM	0203	0098,0004,01CA,01E9,0208,020E,0296
HM1	0205	0214
HM2	020F	0208,0212
HOME	0264	0095,0097,020F
IN	03E8	0032,005A,006C,00F7,00FE,0103,0106,0108,0108,0122,
		0132,C153,0156,015A,0164,0270
INT	0089	0054
INT1	0093	009A
INT10	00D0	00C0,00CE
INT2	0098	00A7
INT3	009D	
INT4	00A8	00A4,0081
INT5	008E	00AB,00AF
INT6	00C0	00CA
INT7	00C4	0002
INT8	00C9	00CF
INT9	00C8	00C3,00D1
IOA	044C	0000,0013,00A1,00A8,01A7,0184,0107,0266,0268
IPL1	0000	0008

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IPL2      0001      0002,0010
IPL3      000D      0006
KE000     0059      0043
KFFFF     0020      0051,0292
KFFF0     0177      0190,0103,010B,0288
K0F00     012E      0124
K0100     001F      000D
K3        0178      0184,01C4
K30G0     027C      0272
K320      0120      0116
K321      01A3      01B3,01F2
K7        01A2      01F5,0288
K70FF     027D      0275
KB        00D3      30C9
LAST      01BF      00E1,0185
LAST1     01CA      0294
LCD       012A      00E0,014A,01C0
LO        01E9
LOC       0086      0061,007E,0083
LST       014A      013F
OUT       044E      0039,0041,0048,004F,0081,010D,01E1,01E5
PACK      014C      00E3
PACK1     014F      0161
PACK2     0150      015F
PACK3     0159      0152
PACK4     0170      014C,0168
PREP      0011      000C
PD        0132      0139
RDCD      0136      00DF,0147,0149
RDCD1     013A      013C
RDCD2     0141      014B
ROED      0C5A      0029
RUPAC     001A      00C0,0007
REAC      0225      009F,0182,01DE,01F7,022D,0238,023A,023D
READ1     022E      022A,0231
READ2     023B      0226,0235
REF       01A1      01BF,0191,027F
RESN      0134      0144,0167,016A
RSN       0130      0105,0136,013A
RSTRT     027E      0018
SAVE      0087      0067,0078,0079
SAVE1     0088      0068,006A,007A
SCIO      012B      00F0,0170,0183,0187,0189,01C2,0281
SEEK      0216      009D,00DA,019A,01D0,01EE,021C,0223
SEEK1     021D      0219,0220
SHIFT     0174      0150
SID       0440      0000,00C0,00C8
SKST      0215      0206,020C
SNSW      00B4      00AE,00BF
SUM       0164      0169
TEST      01A4      0180,028D
USTB      00B6      008B,008E,00C4,00D6,00F5,0193,0195,01CB,01E3,01EA
WDCT      012F      0113,0115,018B,0285
WRIT      023F      0186,01E7,0245,0253,0261
WRITE     01A5      0117,017A,018D
WRIT1     0246      0243,024A,0251
WRIT2     0254      024E,025A
W350A     0200      350A
W350B     021B      350B
W350C     022C      350C
W350D     0239      350D
W350E     0244      350E
W350F     0252      350F,0263
W3500     000F      3500,0005
W3501     0036      3501,003D,0045,0053
W3502     0055      3502,0025
W3503     0057      3503,002F
W3504     00A6      3504
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W3505     00AD      3505
W3506     0146      3506,0137
W3507     0148      3507,0142
W3508     016D      350B
W3509     01C7      3509
W351C     029B      3510,0299
ZERO      012C      00FD,0119,011F
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                        ABS
0000                  * CARD 01 -------------------------------------------------  8B800020
                        ORG    0                                                   8B800030
                      * ----- LOADER SHOULD BE IN LOCS. 00 - 28 ---------          8B800040
                      *-----SEE THAT B IS 30FF.  PRESS START -----------           8B800050
0000 0 30FF             WAIT   -1        --BEGINNING OF LOADER.                     8B800060
0001 0 0C00 000C        XIO  L B1        READ ONE CARD INTO LOC. 28                8B800070
0003 0 0C00 0010        XIO  L K0800     RESET DSW                                 8B800080
0005 0 0C00 000E  A1    XIO  L K0003     SENSE DSW FOR 1442                        8B800100
0007 0 F400 000E        EOR  L K0003     CHECK BITS 14&15 ONLY                     8B800110
0009 0 4820             BSC    Z         SKIP BITS 14&15 ONLY                      8B800120
000A 0 6016             LDX    E1        CONTINUE DSW ANALYSIS                     8B800130
000B 0 6005             LDX    A1        CARD IS BEING READ                        8B800140
000C 0 0028       B1    DC     /0028     READ CONTROL                              8B800150
000D 0 1601             DC     /1601     1442, 8/8 FORMAT                          8B800160
000E 0 0003       K0003 DC     /0003     SENSE DSW CONTROL                         8B800170
000F 0 1700             DC     /1700     WITHOUT TURN OFF                          8B800180
0010 0 0800       K0800 DC     /0800     SENSE DSW CONTROL                         8B800190
0011 0 1703             DC     /1703     TURN OFF REQUEST                          8B800200
0012 0 F400 0010  D1    EOR  L K0800     RETURN DSW WORD TO ACC.                   8B800210
0014 0 3001             WAIT   /1        **ERR. SEE ACC. DSW NOT RIGHT             8B800220
0015 0 6001             LDX    /1        TRY AGAIN                                 8B800230
0016 0 0C00 0010  E1    XIO  L K0800     SENSE AND TURN OFF DSW                    8B800240
0018 0 F400 0010        EOR  L K0800     CHECK FOR BIT 4 ONLY                      8B800250
001A 0 4820             BSC    Z         SKIP OPERATION COMPLETE                   8B800260
001B 0 6012             LDX    D1        DSW ERROR CONDITION                       8B800270
001C 0 6023             LDX    /23                                                 8B800280
001D 0 0000             DC     0         SPACE FILLER                              8B800290
001E 0 0000             DC     /0000         SPACE FILLER                          8B800300
001F 0 0000             DC     /0000         SPACE FILLER                          8B800310
0020 0 0000             DC     /0000         SPACE FILLER                          8B800320
0021 0 0000             DC     /0000         SPACE FILLER                          8B800330
0022 0 0000             DC     /0000         SPACE FILLER                          8B800340
0023 0 6028             LDX    /28       GO TO PROG. LOADED                        8B800350
                      *                                                            8B800360
                      * CARD 02 -------------------------------------------------  8B800370
0024                    ORG    /0028                                               8B800380
0028 0 0C00 0038        XIO  L K0800     RESET DSW                                 8B800390
002A 0 0C00 0034        XIO  L B2        READ A CARD INTO /0000                    8B800400
002C 0 0C00 0036  A2    XIO  L K0003     SENSE DSW  FOR 1442                       8B800410
002E 0 F400 0036        EOR  L K0003     CHECK BITS 14&15 ONLY                     8B800420
0030 0 4820             BSC    Z         SKIP BITS 14 & 15 ONLY                    8B800430
0031 0 603E             LDX    E2        CONTINUE DSW ANALYSIS                     8B800440
0032 0 602C             LDX    A2        CARD IS BEING READ                        8B800450
0033 0 0000             DC     /0000         SPACE FILLER                          8B800460
0034 0 0000       B2    DC     /0000     READ CONTROL  & CONSTANT                  8B800470
0035 0 1601             DC     /1601     1442, 8/8 FORMAT                          8B800480
0036 0 0003       K0003 DC     /0003     SENSE DSW CONTROL                         8B800490
0037 0 1700             DC     /1700     WITHOUT TURN OFF                          8B800500
0038 0 0800       K0800 DC     /0800     SENSE DSW CONTROL                         8B800510
0039 0 1703             DC     /1703     TURN OFF REQUEST                          8B800520
003A 0 0C00 0038  D2    XIO  L K0800     RESET DSW TO ACC                          8B800530
003C 0 3002             WAIT   /2        **ERR. SEE ACC. DSW NOT RIGHT             8B800540
003D 0 6028       R2    LDX    /28       TRY AGAIN                                 8B800550
003E 0 0C00 0036  E2    XIO  L K0003     SENSE DSW                                 8B800560
0040 0 F400 003B        EOR  L K0800     CHECK FOR BIT 4                           8B800570
0042 0 1801             SRA    1         REMOVE NOT READY BIT                      8B800580
0043 0 4820             BSC    Z         SKIP OPERATION COMPLETE                   8B800590
0044 0 603A             LDX    D2        DSW ERROR CONDITION                       8B800600
0045 0 0C00 0038        XIO  L K0800     SENSE - RESET DSW                         8B800610
                      *                                                            CARD 11 WILL START HERE
0047 0 C400 0030  BLD   LD   L R2        SET PROG. LOADED TO RETURN                8B800620
0049 0 D400 0023        STO  L /23           TO THIS PROG.                         8B800630
004B 0 6000             LDX    /0000     GO TO PROG. LOADED                        8B800640
                      *                                                            8B800650
                      *                                                            8B800660
                      * CARD 03 -------------------------------------------------  8B800670
                      * TEST FOR XIO OF READ AND SENSE DSW                         8B800680
                      *---*** RUN ONLY ON IPL ***-------------------------------   8B800690
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004C                    ORG    0                                                   8B800700
0000 0 6023             LDX    /23                                                 8B800710
0001 0 0C00 0016        XIO  L B3        READ A CARD                               8B800720
0003 0 0C00 001A        XIO  L K0800     RESET DSW                                 8B800730
0005 0 0C00 0018  A3    XIO  L K0003     SENSE DSW FOR 1442                        8B800740
0007 0 3003             WAIT   /0003     --ACC. HAS DSW. SHOULD BE0003             8B800750
                      *                                    IF OK PRESS START       8B800760
0008 0 0C00 001A        XIO  L K0800     SENSE AND RESET DSW                       8B800770
000A 0 3003             WAIT   /0003     --ACC. HAS DSW SHOULD BE0800              8B800780
                      *-----------------------------------------------------       8B800790
000B 0 0C00 0016  LP    XIO  L B3        LOOP FOR TESTING READ CARD                8B800800
000D 0 0C00 001A        XIO  L K0800     RESET DSW                                 8B800810
000F 0 0C00 0018  A3A   XIO  L K0003     SHOULD READ AS LONG AS                    8B800820
0011 0 F400 0018        EOR  L K0003     CARDS IN READER                           8B800830
0013 0 4820             BSC    Z         SKIP BITS 14&15 #BUSY,READY               8B800840
0014 0 601C             LDX    E3                                                  8B800850
0015 0 600F             LDX    A3A       BUSY AND NOT READY GET DSW                8B800860
0016 0 0028       B3    DC     /0028     RD CARD CONTROL WORDS                     8B800870
0017 0 1601             DC     /1601                                               8B800880
0018 0 0003       K0003 DC     /0003     SENSE DSW CONTROL                         8B800890
0019 0 1700             DC     /1700     WITHOUT TURN OFF                          8B800900
001A 0 0800       K0800 DC     /0800     SENSE DSW CONTROL                         8B800910
001B 0 1703             DC     /1703     TURN OFF REQUEST                          8B800920
001C 0 0C00 001A  E3    XIO  L K0800     SENSE AND TURN OFF DSW                    8B800930
001E 0 F400 001A        EOR  L K08D0     CHECK BIT 4 ONLY                          8B800940
0020 0 4820             BSC    Z         SKIP OPERATION COMPLETE                   8B800950
0021 0 3003             WAIT   /3        **ERR. DSW WRONG. ACC. HAS                8B800960
                      *                         DSW AFTER AN EOR WITH BIT 4        8B800970
0022 0 600B             LDX    LP        GO READ NEXT CARD                         8B800980
0023 0 6001             LDX    /1        CHANGED TD LDX 28 BY LOADER               8B800990
                      * CARD 04 -------------------------------------------------  8B801000
                      * TEST OF LDX FOR LOCATIONS 0 THRU 3F                        8B801010
0024                    ORG    /0000                                               8B801020
0000 0 6002             LDX    /0002                                               8B801030
0001 0 3004             WAIT   /4        **ERR. LDX, IPL CARD-4                     8B801040
0002 0 601D             LDX    /0010                                               8B801050
0003 0 3004             WAIT   /4        **ERR. LDX, IPL CARD-4                     8B801060
0004 0 3004             WAIT   /4        **ERR. LDX, IPL CARD-4                     8B801070
0005 0 3004             WAIT   /4        **ERR. LDX, IPL CARD-4                     8B801080
0006 0 3004             WAIT   /4        **ERR. LDX, IPL CARD-4                     8B801090
0007 0 3004             WAIT   /4        **ERR. LDX, IPL CARD-4                     8B801100
0008 0 3004             WAIT   /4        **ERR. LDX, IPL CARD-4                     8B801110
0009 0 3004             WAIT   /4        **ERR. LDX, IPL CARD-4                     8B801120
000A 0 3004             WAIT   /4        **ERR. LDX, IPL CARD-4                     8B801130
000B 0 3004             WAIT   /4        **ERR. LDX, IPL CARD-4                     8B801140
000C 0 3004             WAIT   /4        **ERR. LDX, IPL CARD-4                     8B801150
000D 0 3004             WAIT   /4        **ERR. LDX, IPL CARD-4                     8B801160
000E 0 3004             WAIT   /4        **ERR. LDX, IPL CARD-4                     8B801170
000F 0 3004             WAIT   /4        **ERR. LDX, IPL CARD-4                     8B801180
0010 0 3004             WAIT   /4        **ERR. LDX, IPL CARD-4                     8B801190
0011 0 3004             WAIT   /4        **ERR. LDX, IPL CARD-4                     8B801200
0012 0 3004             WAIT   /4        **ERR. LDX, IPL CARD-4                     8B801210
0013 0 3004             WAIT   /4         **ERR. LDX, IPL CARD-4                    8B801220
0014 0 3004             WAIT   /4        **ERR. LDX, IPL CARD-4                     8B801230
0015 0 3004             WAIT   /4        **ERR. LDX, IPL CARD-4                     8B801240
0016 0 3004             WAIT   /4        **ERR. LDX, IPL CARD-4                     8B801250
0017 0 3004             WAIT   /4        **ERR. LDX, IPL CARD-4                     8B801260
0018 0 3004             WAIT   /4        **ERR. LDX, IPL CARD-4                     8B801270
0019 0 3004             WAIT   /4        **ERR. LDX, IPL CARD-4                     8B801280
001A 0 3004             WAIT   /4        **ERR. LDX, IPL CARD-4                     8B801290
001B 0 3004             WAIT   /4        **ERR. LDX, IPL CARD-4                     8B801300
001C 0 3004             WAIT   /4        **ERR. LDX, IPL CARD-4                     8B801310
0010 0 6023             LDX    /0023                                               8B801320
001E 0 3004             WAIT   /4        **ERR. LDX, IPL CARD-4                     8B801330
001F 0 3004             WAIT   /4        **ERR. LDX, IPL CARD-4                     8B801340
0020 0 3004             WAIT   /4        **ERR. LDX, IPL CARD-4                     8B801350
0021 0 3004             WAIT   /4        **ERR. LDX, IPL CARD-4                     8B801360
                                                                                   8B801370
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0022 0 3004              WAIT   /4      **ERR. LOX, IPL CARD-4         8B8013B0
0023 0 6000              LDX    /0000   --CHANGEO TO LOX 28 BY LOADER  8BB01390
                      * CAROS 5 6 7 & 8 TEST THE FOLLOWING------------- 8B801400
                      *1.CRP REAOS IN 0 & 1 EACH BIT POSITION          8BB01410
                      *2.LO 1 PUTS 0 & 1 IN EACH BIT OF ACC.           8B801420
                      *3.BSC Z SKIPS ON ACC#0000 & NOT SKIP ANY 1 8IT. 8B801430
                      * 4 TEST EOR FOR  1,1 & 0,0                      8B801440
                      *                                                8B801450
                      * CARO 05 -------------------------------------- 8B801460
0024                     ORG    /0000                                  8B801470
0000 0 C400 0009      LD   L K0000   SET ACC. TO 0000                  8BB01480
0002 0 4820           BSC    Z       TEST SKIP ON ZERO                 8B801490
0003 0 3005           WAIT   /5      *-ERR. BSC Z FAILED OR ACC.       8BB01500
                      *                      NOT .QUAL 0000.           8B801510
0004 0 C400 000A BIT00 LO  L K8000   SET BIT  0 TO 1, OTHERS O.        88801520
0006 0 4820           BSC    Z       SHOULD NOT SKIP                   8B801530
0007 0 6008           LOX    8IT01                                     8B801540
0008 0 3005           WAIT   /5      **ERR. BSC Z FAIL OR ACC#0000     88801550
0009 0 0000      K0000 OC  /0000                                       8B801560
000A 0 B000      K8000 OC  /8000                                       8B801570
000B 0 C400 0010 BITOI LO  L K4000   SET BIT  1 TO 1, OTHERS O.        8B801580
000D 0 4820           BSC    Z       SHOULO NOT SKIP                   8B801590
000E 0 6011           LOX    BIT02                                     8B801600
000F 0 3005           WAIT   /5      **ERR. BSC Z FAIL OR ACC#000      8B801610
0010 0 4000      K4000 OC  /4000                                       8B801620
0011 0 C400 0016 BIT02 LO  L K2000   SET BIT  2 TO 2, OTHERS O.        8B801630
0013 0 4820           BSC    Z       SHOULO NOT SKIP                   8B801640
0014 0 6017           LOX    BIT03                                     8B801650
0015 0 3005           WAIT   /5      **ERR. BSC Z FAIL OR ACC#0000     8B801660
0016 0 2000      K2000 OC  /2000                                       8B801670
0017 0 C400 001C BIT03 LO  L KI000   SET BIT  3 TO 1, OTHERS O.        8B801680
0019 0 4820           BSC    Z       SHOULO NOT SKIP                   8B801690
001A 0 6010           LOX    BIT04                                     8B801700
001B 0 3005           WAIT   /5      **ERR. BSC Z FAIL OR ACC#0000     88801710
001C 0 1000      KI000 OC  /1000                                       8B801720
0010 0 C400 0022 BIT04 LO  L K0800   SET BIT  4 TO 1, OTHERS O.        8B801730
001F 0 4820           BSC    Z       SHOULD NOT SKIP                   8B801740
0020 0 6023           LOX    /0023                                     8B801750
0021 0 3005           WAIT   /5      **ERR. BSC Z FAIL OR ACC#0000     8B801760
0022 0 0800      K0800 OC  /0800                                       8B801770
0023 0 6000           LOX    /0000   CHANGEO TO LOX 2B 8Y LOAOER       8B801780
                      *                                                8BB01790
                      * CARO 06 -------------------------------------- 88801800
0024                     ORG    /0000   CARO 6--BSC Z & LO L TEST--    88801810
0000 0 C400 0005 BIT05 LO  L K0400   SET BIT  5 TO 1, OTHERS O.        88801820
0002 0 4820           BSC    Z       SHOULO NOT SKIP                   8B801830
0003 0 6006           LOX    8IT06                                     8B801840
0004 0 3006           WAIT   /6      **ERR. BSC Z FAIL OR ACC#0000     8B801850
0005 0 0400      K0400 OC  /0400                                       8B801860
0006 0 C400 000B BIT06 LO  L K0200   SET BIT  6 TO 2, OTHERS O.        8B801870
0008 0 4820           BSC    Z       SHOULO NOT SKIP                   8B801880
0009 0 600C           LOX    BIT07                                     8B801890
000A 0 3006           WAIT   /6      **ERR. BSC Z FAIL OR ACC#0000     8B801900
000B 0 0200      K0200 OC  /0200                                       88801910
000C 0 C400 0011 BIT07 LO  L K0100   SET BIT  7 TO 1, OTHERS O.        88801920
000E 0 4820           BSC    Z       SHOULO NOT SKIP                   8B801930
000F 0 6012           LOX    BIT08                                     8B801940
0010 0 3006           WAIT   /6      **ERR. BSC Z FAIL OR ACC#0000     88801950
0011 0 0100      K0100 OC  /0100                                       8B801960
0012 0 C400 0017 BIT08 LO  L K0080   SET 8IT  8 TO 1, OTHERS O.        88801970
0014 0 4820           8SC    Z       SHOULO NOT SKIP                   88801980
0015 0 6018           LOX    BIT09                                     8B801990
0016 0 3006           WAIT   /6      **ERR. 8SC Z FAIL OR ACC#0000     88802000
0017 0 0080      K0080 OC  /0080                                       88802010
0018 0 C400 0010 BIT09 LO  L K0040   SET BIT  9 TO 1, OTHERS O.        88802020
001A 0 4820           BSC    Z       SHOULO NOT SKIP                   88802030
001B 0 6023           LOX    /0023                                     88802040
001C 0 3006           WAIT   /6      **ERR. BSC Z FAIL OR ACC#0000     88802050
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0010 0 0040      K0040 OC  /0040                                       8BB02060
001E 0 0000           OC  /0000        SPACE FILLER                    8B802070
001F 0 0000           OC  /0000        SPACE FILLER                    8BB02080
0020 0 0000           OC  /0000        SPACE FILLER                    8B802090
0021 0 0000           OC  /0000        SPACE FILLER                    8B802100
0022 0 0000           OC  /0000        SPACE FILLER                    8B802110
0023 0 6000           LOX    /0000   CHANGED TO LOX 2B 8Y LOAOER       8B802120
                      *                                                8B802130
                      * CARO 07 -------------------------------------- 8B802140
0024                     ORG    /0000   CARO 7--BSC Z & LO 1 TEST--    88802150
0000 0 C400 0005 BIT10 LO  L K0020   SET BIT 10 TO 1, OTHERS O.        88802160
0002 0 4820           BSC    Z       SHOULD NOT SKIP                   88802170
0003 0 6006           LOX    BIT11                                     8B802180
0004 0 3007           WAIT   /7      **ERR. BSC Z FAIL OR ACC#0000     88802190
0005 0 0020      K0020 OC  /0020                                       88802200
0006 0 C400 000B 8IT11 LO  L K0010   SET BIT 11 TO 1, UTHERS O.        8B802210
0008 0 4820           BSC    Z       SHOULU NOT SKIP                   8BB02220
0009 0 600C           LOX    BIT12                                     8B802230
000A 0 3007           WAIT   /7      **ERR. BSC Z FAIL OR ACC#0000     88802240
000B 0 0010      K0010 OC  /0010                                       88802250
000C 0 C400 0011 BIT12 LO  L K0008   SET BIT 12 TO 1, OTHERS O.        88802260
000E 0 4820           BSC    Z       SHOULD NOT SKIP                   8B802270
000F 0 6012           LOX    8IT13                                     8BB022B0
0010 0 3007           WAIT   /7      **ERR. BSC Z FAIL OR ACC#0000     8B802290
0011 0 0008      K0008 OC  /0008                                       88802300
0012 0 C400 0017 BIT13 LO  L K0004   SET BIT 13 TO 1, OTHERS O.        88802310
0014 0 4820           BSC    Z       SHOULD NOT SKIP                   8B802320
0015 0 6018           LOX    BIT14                                     8BB02330
0016 0 3007           WAIT   /7      **ERR. BSC Z FAIL OR ACC#0000     8B802340
0017 0 0004      K0004 OC  /0004                                       88802350
0018 0 C400 0010 BIT14 LD  L K0002   SET BIT 14 TO 1, OTHERS O.        8BB02360
001A 0 4820           BSC    Z       SHOULD NOT SKIP                   8BB02370
001B 0 6023           LOX    /0023                                     88802380
001C 0 3007           WAIT   /7      *ERR. BSC Z FAIL OR ACC#0000      88802390
0010 0 0002      K0002 OC  /0002                                       88802400
001E 0 0000           OC  /0000        SPACE FILLER                    8B802410
001F 0 0000           OC  /0000        SPACE FILLER                    8BB02420
0020 0 0000           OC  /0000        SPACE FILLER                    8BB02430
0021 0 0000           OC  /0000        SPACE FILLER                    8B802440
0022 0 0000           OC  /0000        SPACE FILLER                    8BB02450
0023 0 6000           LOX    /0000   CHANGEO TO LDX 28 BY LOAOER       8B802460
                      *                                                8BB02470
                      * CARD 08 -------------------------------------- 8BB02480
0024                     ORG    /0000   CARD 8 BSC 7 & LD BIT 15       8B802490
                      *                      AND EOR 1,1 & 0,0         8B802500
0000 0 C400 0005 BIT15 LD  L K0001   SET BIT 15 TO 1, OTHERS O.        88802510
0002 0 4820           BSC    Z       SHOULO NOT SKIP                   8BB02520
0003 0 6006           LOX    TEOR                                      8B802530
0004 0 3008           WAIT   /8      *-ERR. BSC Z FAIL OR ACC#0000     8BB02540
0005 0 0001      K0001 DC  /0001                                       8BB02550
0006 0 C400 0012 TEOR  LO  L KFFFF                                     8BB02560
0008 0 F400 0012      EOR  L KFFFF    TEST O#FFFF & A#FFFF             8BB02570
000A 0 4820           BSC    Z       SHOULD SKIP                       8BB02580
000B 0 3008           WAIT   /B      **ERR. SEE ACC. SHOULD # 0000     8BB02590
000C 0 F400 0011      EOR  L K0000    TEST O#0000 & A#0000             8BB02600
000E 0 4820           BSC    Z       SHOULD SKIP                       8BB02610
000F 0 3008           WAIT   /8      *-ERR. SEE ACC. SHOULO # 0000     8BB02620
0010 0 6023           LOX    /0023                                     88802630
0011 0 0000      K0000 OC  /0000                                       88802640
0012 0 FFFF      KFFFF OC  /FFFF                                       88802650
0013 0 0000           OC  /0000        SPACE FILLER                    8B802660
0014 0 0000           OC  /0000        SPACE FILLER                    8BB02670
0015 0 0000           OC  /0000        SPACE FILLER                    8BB02680
0016 0 0000           OC  /0000        SPACE FILLER                    8B802690
0017 0 0000           OC  /0000        SPACE FILLER                    8B802700
0018 0 0000           OC  /0000        SPACE FILLER                    88802710
0019 0 0000           OC  /0000        SPACE FILLER                    8BB02720
001A 0 0000           OC  /0000        SPACE FILLER                    8B802730
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001B 0 0000                DC      /0000              SPACE FILLER            8B802740
001C 0 0000                DC      /0000              SPACE FILLER            8B802750
001D 0 0000                DC      /0000              SPACE FILLER            8B802760
001E 0 0000                DC      /0000              SPACE FILLER            8B802770
001F 0 0000                DC      /0000              SPACE FILLER            8B802780
0020 0 0000                DC      /0000              SPACE FILLER            8B802790
0021 0 0000                DC      /0000              SPACE FILLER            8B802800
0022 0 0000                DC      /0000              SPACE FILLER            8B802810
0023 0 6000                LDX     /0000              CHANGED TO LDX 28 BY LOADER 8B802820
            *                                                                 8B802830
            * CARD 09 ------------------------------------------------------- 8B802840
            *       TEST LOAD AND STORE LONG FORM                             8B802850
            *       TEST ALL BITS TRANSFER B-D-A-U-A, A-M, A-B                8B802860
            *       EOR L & BSC Z COULD CAUSE FAILURE                         8B802870
0024                       ORG     /0000                                      8B802880
0000 0 C400 000D    TST1   LD   L  KON1&1             LOAD A TO 3333          8B802890
0002 0 0400 CCCC    KON2   STO  L  /CCCC              STORE 3333 IN CCCC      8B802900
0004 0 C400 CCCC           LD   L  /CCCC              GET  3333 FROM CCCC     8B802910
0006 0 F400 0000           EOR  L  KON1&1             EOR A#3333  TO  0#3333  8B802920
0008 0 4820               BSC     Z                  SHOULD SKIP             8B802930
0009 0 3009               WAIT    /9                 **ERR. A NOT 0000. GO TO TST1 8B802940
000A 0 C400 0003    TST2   LD   L  KON2&1             LD A TO CCCC            8B802950
000C 0 0400 3333    KON1   STO  L  /3333              STORE CCCC AT 3333      8B802960
000E 0 C400 3333           LD   L  /3333              GET CCCC FROM 3333      8B802970
0010 0 F400 0003           EOR  L  KON2&1             EOR A#CCCC TO D#CCCC    8B802980
0012 0 4820               BSC     Z                  SHOULD SKIP             8B802990
0013 0 3009               WAIT    /9                 **ERR. A NOT 0000. GO TO TST2 8B803000
0014 0 6023               LDX     /0023                                      8B803010
0015 0 0000               DC      /0000              SPACE FILLER            8B803020
0016 0 0000               DC      /0000              SPACE FILLER            8B803030
0017 0 0000               DC      /0000              SPACE FILLER            8B803040
0018 0 0000               DC      /0000              SPACE FILLER            8B803050
0019 0 0000               DC      /0000              SPACE FILLER            8B803060
001A 0 0000               DC      /0000              SPACE FILLER            8B803070
001B 0 0000               DC      /0000              SPACE FILLER            8B803080
001C 0 0000               DC      /0000              SPACE FILLER            8B803090
001D 0 0000               DC      /0000              SPACE FILLER            8B803100
001E 0 0000               DC      /0000              SPACE FILLER            8B803110
001F 0 0000               DC      /0000              SPACE FILLER            8B803120
0020 0 0000               DC      /0000              SPACE FILLER            8B803130
0021 0 0000               DC      /0000              SPACE FILLER            8B803140
0022 0 0000               DC      /0000              SPACE FILLER            8B803150
0023 0 6000               LDX     /0000              CHANGED TO LDX 28 BY LOADER 8B803160
            * CARD A TEST EOR FOR 1,0 0,1--------------------------------     8B803170
            *       SRA 1 PARTLY TESTED                                       8B803180
            *                                                                 8B803190
            * CARD 0A ------------------------------------------------------- 8B803200
0024                       ORG     /0000                                      8B803210
0000 0 C400 001B           LD   L  K8000              PUT BIT 0#1 IN ACC.     8B803220
0002 0 6008               LDX     RETRY-2            GO STORE IT IN TEST     8B803230
0003 0 1801        SHIFT   SRA     1                  SHIFT TO TEST NEXT BIT  8B803240
0004 0 4820               BSC     Z                  SHOULD NOT SKIP         8B803250
0005 0 6008               LDX     RETRY-2                                    8B803260
0006 0 300A               WAIT    /A                 **ERR. SRA 1 DROPPED BIT 8B803270
            *                                          LOC. TEST HAS WORD BEFORE 8B803280
            *                                          SRA 1 THAT FAILED.     8B803290
0007 0 600A               LDX     RETRY                                      8B803300
0008 0 D400 0018           STO  L  TEST               STORE BIT FOR EOR TEST 0&1 8B803310
000A 0 C400 0019    RETRY  LD   L  K0000              CLEAR ACC.             8B803320
000C 0 F400 0018           EOR  L  TEST               EOR ACC#0  0 HAS A 1.  8B803330
000E 0 4820               BSC     Z                  SHOULD NOT SKIP         8B803340
000F 0 6012               LDX     CONTA                                      8B803350
0010 0 300A               WAIT    /A                 **ERR. A IS 0000  GO TO RETRY 8B803360
0011 0 600A               LDX     RETRY                                      8B803370
0012 0 F400 0019    CONTA  EOR  L  K0000              EOR ACC. HAS A 1 & 0#0 8B803380
0014 0 4820               BSC     Z                  SHOULD NOT SKIP         8B803390
0015 0 601C               LDX     CONTB                                      8B803400
0016 0 300A               WAIT    /A                 **ERR. A IS 0000  GO TO RETRY 8B803410
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0017 0 600A               LDX     RETRY                                      8B803420
0018 0 0000        TEST   DC      /0000              BIT WITH 1 IS BEING TESTED 8B803430
0019 0 0000        K0000  DC      /0000                                      8B803440
001A 0 0001        K0001  DC      /0001                                      8B803450
001B 0 8000        K8000  DC      /8000                                      8B803460
001C 0 F400 001A    CONTB  EOR  L  K0001              TEST FOR BIT 15#1       8B803470
001E 0 4820               BSC     Z                  SKIP BIT 15#1,ALL POS. DONE 8B803480
001F 0 6003               LDX     SHIFT              GO TO DO NEXT BIT POSITION. 8B803490
0020 0 6023               LDX     /0023                                      8B803500
0021 0 0000               DC      /0000              SPACE FILLER            8B803510
0022 0 0000               DC      /0000              SPACE FILLER            8B803520
0023 0 6000               LDX     /0000              CHANGED TO LDX 28 BY LOADER 8B803530
            *                                                                 8B803540
            * CARD 0B ------------------------------------------------------- 8B803550
            *       TEST ADD BY POSITIVE AND NEGATIVE ONES                    8B803560
0024                       ORG     0                                         8B803570
0000 0 C400 001C           LD   L  H0000              CLEAR TO ZERO           8B803580
0002 0 D400 001B           STO  L  SUMMI              SUM OF MINUS ONES       8B803590
0004 0 D400 001A           STO  L  SUMPL              SUM OF PLUS ONES        8B803600
0006 0 C400 001B    ADD    LD   L  SUMMI              GET SUM OF MINUS ONES   8B803610
0008 0 8400 001E           A    L  HFFFF              ADD MINUS ONE           8B803620
000A 0 D400 001B           STO  L  SUMMI              STORE SUM OF MINUS ONES 8B803630
000C 0 C400 001A           LD   L  SUMPL              GET SUM OF PLUS ONES    8B803640
000E 0 8400 001D           A    L  H0001              ADD PLUS ONE            8B803650
0010 0 D400 001A           STO  L  SUMPL              STORE SUM OF PLUS ONES  8B803660
0012 0 4820               BSC     Z                  SKIP WHEN SUM IS 0000   8B803670
0013 0 6015               LDX     TOTAL                                      8B803680
0014 0 6023               LDX     /0023              BRANCH WHEN ONE PASS DONE. 8B803690
0015 0 8400 001B    TOTAL  A    L  SUMMI              ADD SUMMI TO SUMMPL     8B803700
0017 0 4820               BSC     Z                  SHOULD SKIP             8B803710
0018 0 300B               WAIT    /B                 **ERR. TOTAL SHOULD BE ZERO 8B803720
0019 0 6006               LDX     ADD                                        8B803730
001A 0 0000        SUMPL  DC      /0000              LOC. FOR SUM OF PLUS ONES 8B803740
001B 0 0000        SUMMI  DC      /0000              LOC. FOR SUM OF MINUS ONES 8B803750
001C 0 0000        H0000  DC      0                                          8B803760
001D 0 0001        H0001  DC      1                                          8B803770
001E 0 FFFF        HFFFF  DC      -1                                         8B803780
001F 0 0000               DC      0                  SPACE FILLER            8B803790
0020 0 0000               DC      0                  SPACE FILLER            8B803800
0021 0 0000               DC      0                  SPACE FILLER            8B803810
0022 0 0000               DC      0                  SPACE FILLER            8B803820
0023 0 6000               LDX     /0000              CHANGED TO LDX 28 BY LOADER 8B803830
            *                                                                 8B803840
            * CARD 10 ------------------------------------------------------- 8B803850
0024                       ORG     0                                         8B803860
0000 0 0C00 000C           XIO  L  B10                READ ONE CARD INTO 8LO  8B803870
0002 0 0C00 0038           XIO  L  K0800              RESET DSW               8B803880
0004 0 0C00 0036    A10    XIO  L  K0003              SENSE DSW FOR 1442      8B803890
0006 0 F400 0036           EOR  L  K0003              CHECK BITS 14&15 ONLY   8B803900
0008 0 4820               BSC     Z                  SKIP BITS 14 & 15 ONLY  8B803910
0009 0 6012               LDX     E10                CONTINUE DSW ANALYSIS   8B803920
000A 0 6004               LDX     A10                CARD IS BEING READ      8B803930
000B 0 6028        C10    LDX     /002B                                      8B803940
000C 0 0047        B10    DC      BLD                READ CONTROL            8B803950
000D 0 1601               DC      /1601              1442 8/8 FORMAT         8B803960
000E 0 F400 0038    010    EOR  L  K0800              RETURN DSW WORD TO ACC. 8B803970
0010 0 3010               WAIT    /10                **ERR. SEE ACC. DSW NOT RIGHT 8B803980
0011 0 6000               LDX     /0                 TRY AGAIN               8B803990
0012 0 0C00 0038    E10    XIO  L  K0800              SENSE AND TURN OFF DSW  8B804000
0014 0 F400 0038           EOR  L  K0800              CHECK FOR BIT 4 ONLY    8B804010
0016 0 4820               BSC     Z                  SKIP OPERATION COMPLETE 8B804020
0017 0 600E               LDX     010                DSW ERROR CONDITION     8B804030
0018 0 6028               LDX     /0028              READ A CARD & FORM ITS SUM 8B804040
            *                                                                 8B804050
            * CARD 11 ------------------------------------------------------- 8B804060
0019                       ORG     BLD                                       8B804070
            * THIS CARD IS READ OVER THE LOADER IN 46 THRU 68                 8B804080
            * USES ITS INSTRUCTIONS FROM 0028 THRU 0045                       8B804090
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0047 0 C400 0024       LD   L  /0D24       GET WORD COUNT                8B80410D
0049 D 4820            BSC  Z              SKIP IF WORD COUNT ZERO       88B04110
DD4A 0 604F            LDX  SUM1                                         8B80412D
DD4B D 3011            WAIT /11     **ERR. WORD COUNT IS ZERO            8B80413D
004C 0 6028            LDX  /DD28          START LOADS NEXT CARD         8B80414D
004D 0 00D0   KD0D0    DC   /0000                                       8B804150
004E D D0D1   K0001    DC   /DDD1                                       8B804160
004F 0 C400 004D SUM1  LD   L  K0000       RESTORE MODIFIED ADDRESS     8B804170
0051 D D400 0058       STO  L  CKLDD&1                                  88804180
0053 D D4DD DD27       STD  L  /0D27       CLEAR SUM LOC.               88804190
0055 0 C4D0 DD27       LD   L  /0027                                    8B804200
0057 0 84D0 FFFF CKLOD A    L  /FFFF       FORM SUM OF LOCS. 0 THRU 26  88804210
0059 0 D4D0 0027       STO  L  /0D27                                    88804220
DD5B D C4D0 0058       LD   L  CKLOD&1     MODIFY ADDRESS               88804230
DD5D D 8400 004E       A    L  K0001                                    8BB0424D
DD5F D D4DD 0058       STD  L  CKLDD&1                                  88804250
0061 D F4D0 DD56       EOR  L  CKLOO-1     CHECK THAT ALL WORDS DONE    88804260
DD63 D 4820            BSC  Z              SKIP.ALL LOCS. ADDED         88804270
DD64 D 6055            LDX  CKLOO-2                                     88804280
0065 0 C4D0 DD27       LD   L  /0027       LOAD SUM 0 THRU 26           88804290
0067 0 482D            BSC  Z              SKIP READ IN OK.             8BD04300
0068 0 3011            WAIT /11     **ERR. IN CHECK SU. START           8B804310
       *                                   LOADS NEXT CARD.             88804320
DD69 D 6000   MOVE     LDX  /0D00          RUN CARD LOADED. CARO 13     88804330
       *                                   BEGINS LOADING HERE.         88804340
       * CARD 12 --------------------------------------------------     8B80436D
006A                   ORG  D                                           8880437D
       * CHECK SUM CHECK CARD. THIS IS USED TO DETECT                   88804380
       * ERRORS THAT OCCUR AS THE RESULT OF WRONG CHECK                 88804390
       * SUM FOR CARD IMAGE IN LOCS. 0000 THRU 0026                     88804400
       * CHECK SUM ROUTINES ADD LOC. 0 THRU 26 IN SEQUENCE              88804410
       *   . CORRECT ACC. AFTER ADD IS SHOWN BELOW IN                   88804420
       * SEQUENCE THE PROG. FOLLOWS.                                    8BB04430
       *     CORE CONTENTS. CORRECT SUM.   CORE LOC.                    8B804440
0000 0 6028            OC   /6028    6028    0000                       88804450
0001 0 9FD7            DC   /9FD7    FFFF    0001                       88804460
0002 0 FFFF            DC   /FFFF    FFFE    0002                       8BB04470
0003 0 0001            DC   /0001    FFFF    0003                       8BB044B0
0004 0 0001            DC   /0001    0000    0004                       88804490
0005 0 0001            DC   /0001    0001    0005                       88804500
0006 0 0001            DC   /0001    0002    0006                       8BB04510
0007 0 0002            DC   /0002    0004    0007                       88804520
0008 0 0004            DC   /0004    0008    0008                       88804530
0009 0 0008            OC   /0008    0010    0009                       8BB04540
000A 0 0010            DC   /0010    0020    000A                       88804550
000B 0 0020            DC   /0020    0040    000B                       88804560
000C 0 0040            DC   /0040    0080    000C                       88804570
000D 0 0080            DC   /0080    0100    000D                       88804580
000E 0 0100            DC   /0100    0200    000E                       88804590
000F 0 0200            DC   /0200    0400    000F                       8B804600
0010 0 0400            DC   /0400    0800    0010                       8B804610
0011 0 0800            DC   /0800    1000    0011                       88804620
0012 0 1000            DC   /1000    2000    0012                       88804630
0013 0 2000            DC   /2000    4000    0013                       8BB04640
0014 0 4000            DC   /4000    8000    0014                       88804650
0015 0 B000            DC   /8000    0000    0015                       8BB04660
0016 0 5555            DC   /5555    5555    0016                       8BB04670
0017 0 5555            DC   /5555    AAAA    0017                       8BB04680
0018 0 AAAA            DC   /AAAA    5554    0018                       8BB04690
0019 0 0001            DC   /0001    5555    0019                       88804700
001A 0 AAAA            DC   /AAAA    FFFF    001A                       8BB04710
001B 0 AAAA            DC   /AAAA    AAA9    001B                       88804720
001C 0 5557            DC   /5557    FFFF    001C                       88804730
001D 0 5555            DC   /5555    5554    001D                       88804740
001E 0 AAAB            DC   /AAAB    FFFF    001E                       8BB04750
001F 0 1000            DC   /1000    0FFF    001F                       8B804760
0020 0 F100            DC   /F100    00FF    0020                       8B804770
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0D21 0 FF1D            DC   /FF10   000F    0D21                        8B804780
0022 0 FFF1            DC   /FFF1   0000    D022                        8B80479D
0D23 0 321D            DC   /3210   3210    0023                        8B804800
       *                    /0D24   3234    D024                        8B804810
       *                    /010D   3334    D025                        88804820
       *                    /CCCC   0000    0026                        8B804830
       *                                                                8B804840
       * CARD 13 --------------------------------------------------     8B804860
0024                   ORG  0                                           8B804B60
0D00 0 0C00 DODC       XID  L  B13         REAO TWO CARDS               8B8D487D
0D02 0 0C00 D038       XIO  L  KD8DD       RESET DSW                    8B8D4880
00D4 0 0CD0 0036 A13   XID  L  KDDD3       SENSE DSW FOR 1442           88804890
0D06 0 F400 0036       EDR  L  KDDD3                                    8B8D49D0
0DD8 0 482D            BSC  Z              SKIP BITS 14 & 15 ONLY       8B8D4910
0DD9 D 6013            LDX  E13            CDNTINUE DSW ANALYSIS        8B8D4920
0DDA 0 6DDF            LDX  A13            CARD IS BEING READ           8BBD493D
0008 D 008A   CON2     DC   CD15                                       8B8D4940
DDDC 0 0069   B13      MDVE                READ CONTROL PROG. MODIFYS.  8B8D4950
00D0 0 1601            DC   /1601          1442 8/8 FORMAT              8BB0496D
0DDE 0 6D28   C13      LDX  /D028                                      88804970
0DDF D F400 DD3B D13   EOR  L  KD80D       RETURN DSW WORD TO ACC.      8BB04980
0011 0 3D13            WAIT /13     **ERR. SEE ACC. DSW NOT RIGHT       88804990
0D12 0 6000            LDX  /D             TRY AGAIN                    8B805000
0D13 0 0C0D 0D38 E13   XID  L  KD8DD       SENSE AND RESET DSW          8BBD5010
DD15 0 F400 0038       EOR  L  KD800       CHECK FDR BIT 4 ONLY         8B805020
DD17 0 482D            BSC  Z              SKIP OPERATION COMPLETE      888D503D
0D18 0 6DDF            LDX  D13            DSW ERROR CONDITION          8B805040
DD19 0 C400 DDDE MOD1  LO   L  C13         SET THIS PROG. TO READ 2ND   88805050
DD1B 0 040D 0019       STO  L  MOD1        CARD & BR. TO READ IN        8B805060
DD1D D C4DD DDDB       LD   L  CDN2        FIRST PROG. CARD             8B80507D
001F 0 D400 000C       STD  L  B13                                     8B805080
0D21 0 6000            LDX  /0                                         8B805090
       *                                                                8B805100
       * CARD 14 --------------------------------------------------     8B805120
0022                   DRG  MOVE                                        88805120
0069 0 C400 0025 MOVE  LD   L  /0025       GET AODRESS FOR FIRST WORD   8B805130
006B 0 4820            BSC  Z              SKIP ADDRESS EQU. 0000       88805140
006C 0 6070            LDX  STORE                                       8B805150
006D 0 6000            LDX  /0000                                       8B805160
006E 0 6400 0092 HOP   LDX  L  CKMOV                                    8B805170
0070 0 D400 0079 STORE STO  L  PUT&1       SET FIRST WORD ADDRESS       8B805180
0072 0 C400 004D       LD   L  K0000                                    8B805190
0074 0 D400 0077       STO  L  GET&1       SET TU GET FIRST WORD AT 0   8B805200
0076 0 C400 FFFF GET   LD   L  /FFFF       GET PROG. WORD               8B805210
0078 0 D400 FFFF PUT   STO  L  /FFFF       PUT PROG. WORD               8B805220
007A 0 C400 0079       LD   L  PUT&1       MODIFY PUT                   88805230
007C 0 8400 004E       A    L  K0001                                    8B805240
007E 0 D400 0079       STD  L  PUT&1                                    8B805250
0080 0 C400 0077       LD   L  GET&1       MOOIFY GET                   88805260
0082 0 8400 004E       A    L  K0001                                    8B805270
0084 0 D400 0077       STO  L  GET&1                                    8B805280
0086 0 F400 0024       EOR  L  /0024       CHECK FOR ALL WORDS MOVED    8B805290
0088 0 4820            BSC  Z              SKIP ALL WORDS MOVED         8BB05300
0089 0 6076            LDX  GET                                         8B805310
008A D 3014   CD15     WAIT /14     **ERR. CARD 15 SHOULD READ          8B805320
       *                                   OVER THIS WAIT.              8BB05330
       *                                                                8B805340
       * CARD 15 --------------------------------------------------     8B805350
008B                   DRG  CD15                                        8B805360
008A 0 C400 0025 SUM2  LD   L  /0025       GET ADDRESS OF FIRST WORD    8B805370
00BC 0 D400 0093       STO  L  CKMOV&1       PUT IT INTO ROUTINE        8B805380
00BE 0 C400 004D       LD   L  K0000       GET ADDRESS OF FIRST WORD    8B805390
0090 0 D400 0095       STO  L  COMP&1        IN IMAGE & STORE IT.       8B805400
0092 0 C400 FFFF CKMDV LD   L  /FFFF       GET WORD MDVED               8B805410
0094 0 F400 FFFF CDMP  EOR  L  /FFFF       COMPARE WITH CARD IMAGE      8B805420
0096 0 4820            BSC  Z              SKIP WORD STORED OK          8BB05430
0097 0 3015            WAIT /15     **ERR. WORD NOT STORFD OK.          8B805440
009B 0 C400 0093       LD   L  CKMOV&1     MODIFY FOR NEXT WORD         8B805450
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009A 0 B400 004E          A    L  K0001                            8BB05460
009C 0 D400 0093          STD  L  CKMDV&1                          8BB05470
009E 0 C400 0095          LD   L  CDMP&1     MODIFY FOR NEXT CDMPARE BBB054B0
00A0 0 B400 004E          A    L  K0001                            8BB05490
00A2 0 D400 0095          STO  L  CDMP&1                           8BB05500
00A4 0 F400 0024          EOR  L  /0024      CHECK IF ALL DONE     8BB05510
00A6 0 4820              BSC     Z          SKIP ALL WDRDS CHECKED 8BB05520
00A7 0 606E              LDX     HDP        GO TO CKMOV            BB805530
00A8 0 6028              LDX     /0028      GET NEXT CARD          BB805540
                                                                   BB805550
                   *  CARD 16 ---------------------------------------  8BB05560
                   * THIS CARD IS USED TD CHECK THAT THE MOVE         BBB05570
                   * PORTIDN DF THE LOADER WORKS.   THE CARD SHDULD   8BB055B0
                   * BE PLACED IN LOCS. 0100 THRU 0123 .             BBB05590
                   * EACH LOCATIDN SHDULD CDNTAIN ITS OWN ADDRESS.    BBB05600
                   * THE LISTING SHOWS THE SUM DURING CHECK SUM ADD.  BBB05610
                   *                       -SUM OF LOCS.-             8BB05620
00A9                      ORG     /0100                             8BB05630
0100 0 0100              DC      /0100       0100                  BBB05640
0101 0 0101              DC      /0101       0201                  8BB05650
0102 0 0102              DC      /0102       0303                  BB805660
0103 0 0103              DC      /0103       0406                  BB805670
0104 0 0104              DC      /0104       050A                  BB8056B0
0105 0 0105              DC      /0105       060F                  8BB05690
0106 0 0106              DC      /0106       0715                  BBB05700
0107 0 0107              DC      /0107       081C                  BB805710
0108 0 0108              DC      /0108       0824                  BB805720
0109 0 0109              DC      /0109       092D                  8BB05730
010A 0 010A              DC      /010A       0937                  BBB05740
010B 0 010B              DC      /010B       0944                  8BB05750
010C 0 010C              DC      /010C       0A4E                  8BB05760
010D 0 010D              DC      /010D       0B5B                  8BB05770
010E 0 010E              DC      /010E       0C69                  BBB057B0
010F 0 010F              DC      /010F       0D7B                  BB805790
0110 0 0110              DC      /0110       0E88                  8BB05B00
0111 0 0111              DC      /0111       0F99                  8BB05810
0112 0 0112              DC      /0112       10AB                  8BB05820
0113 0 0113              DC      /0113       118E                  8BB05830
0114 0 0114              DC      /0114       12D2                  8BB05840
0115 0 0115              OC      /0115       13E7                  BB805B50
0116 0 0116              DC      /0116       14FD                  BB805B60
0117 0 0117              DC      /0117       1614                  8BB05B70
0118 0 0118              DC      /0118       1726                  BB805880
0119 0 0119              OC      /0119       183F                  BB805890
011A 0 011A              DC      /011A       1959                  BB805900
011B 0 011B              OC      /011B       1A76                  BB805910
011C 0 011C              DC      /011C       1B92                  8B805920
011D 0 011D              DC      /011D       1CAF                  8B805930
011E 0 011E              DC      /011E       1DCD                  8B805940
011F 0 011F              DC      /011F       1EEC                  BBB05950
0120 0 0120              DC      /0120       200C                  88805960
0121 0 0121              DC      /0121       212D                  BBB05970
0122 0 0122              DC      /0122       224F                  8BB059B0
0123 0 0123              DC      /0123       2472                  BB805990
0124   0000              END     0                                 8BB06000
NO STATEMENTS FLAGGED IN THE ABDVE ASSEMBLY
```

```
          C R D S S   R E F E R E N C E
NAME   ·VALUE  REFERENCES
ADD    0006    0019
A1     0005    000B
A10    0004    000A
A13    0004    000A
A2     002C    0032
A3     0005
A3A    000F    0015
BIT00  0004
BIT01  000B    0007
BIT02  0011    000E
BIT03  0017    0014
BIT04  001D    001A
BIT05  0000
BIT06  0006    0003
BIT07  000C    0009
BIT0B  0012    000F
BIT09  001B    0015
BIT10  0000
BIT11  0006    0003
BIT12  000C    0009
BIT13  0012    000F
BIT14  0018    0015
BIT15  0000
BLD    0047    000C
B1     000C    0001
B10    000C    0000
B13    000C    0000,001F
B2     0034    002A
B3     0016    0001,000B
CD15   008A    000B
CKLDD  0C57    0051,005B,005F,0061,0064
CKMDV  0092    006E,00BC,0098,009C
CDMP   0094    0090,009E,00A2
CONTA  0012    000F
CONTB  001C    0015
CON2   000B    001D
C10    000B
C13    000E    0019
D1     0012    001B
D10    000E    0017
D13    000F    0018
D2     003A    0044
E1     0016    000A
E10    0012    0009
E13    0013    0009
E2     003E    0031
E3     001C    0014
GET    0076    0074,00B0,0084,0089
HFFFF  001E    0008
HDP    006E    00A7
H0000  001C    0000
H0001  001D    000E
KFFFF  0012    0006,0008
KDN1   000C    0000,0006
KDN2   0002    000A,0010
KD000  0009    0000
KD001  0005    0000
KD003  000E    0005,0007
KD800  0010    0003,0012,0016,0018
K0000  0011    000C
K0000  0019    000A,0012
K0001  001A    001C
K0003  0018    0005,000F,0011
K0000  004D    004F,0072,00BE
K0001  004E    005D,007C,0082,009A,00A0
K0002  001D    0018
```

          K0003   0036   0004,0004,0006,0006,002C,002E,003E
          K0004   0017   0012
          K0008   0011   000C
          K0010   0008   0006
          K0020   0005   0000
          K0040   0010   0018
          K0080   0017   0012
          K0100   0011   000C
          K0200   0008   0006
          K0400   0005   0000
          K0800   001A   0003,0008,0000,001C,001E
          K0800   0022   0010
          K0800   0038   0002,0002,000E,000F,0012,0013,0014,0015,0028,003A,0040,0045
          K1000   001C   0017
          K2000   0016   0011
          K4000   0010   000B
          K8000   001B   0000
          K8000   000A   0004
          LP   000B   0022
          MOD1   0019   0018
          MOVE   0069   000C
          MOVE   0069
          PUT   0078   0070,007A,007E
          RETRY   000A   0002,0005,0007,0011,0017
          R2   0030   0047
          SHIFT   0003   001F
          STORE   0070   006C
          SUMMI   001B   0002,0006,000A,0015
          SUMPL   001A   0004,000C,0010
          SUM1   004F   004A
          SUM2   008A
          TEOR   0006   0003
          TEST   0018   0008,000C
          TOTAL   0015   0013
          TST1   0000
          TST2   000A

          ENO OF ASSEMBLY

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BASIC DIAGNOSTIC LOADER (CARD)

TABLE OF CONTENTS

1. PURPOSE

    THE 1800 BASIC DIAGNOSTIC LOADER IS A SELF-CHECKING PROGRAM USED TO
    LOAD THE PROCESSOR DIAGNOSTIC PROGRAMS AND TO VERIFY THEIR CORRECT
    LOADING. THE LOADER CONTAINS ONE-CARD PROGRAMS USED AS AIDS IN
    DIAGNOSIS OF BASIC FAILURES IN THE PROCESSOR.

2. PREREQUISITES

    2.1   PROGRAM PREREQUISITES

        AN 1800 PROCESSOR DIAGNOSTIC PROGRAM PUNCHED IN 8-8
        FORMAT IS REQUIRED.

    2.2   EQUIPMENT PREREQUISITES

        A. 1800 DATA ACQUISITION AND CONTROL SYSTEM PROCESSOR.

        B. 1442 SERIAL CARD READ/PUNCH.

3. OPERATING PROCEDURE

    3.1   PROGRAM LOADING

        A. AT 1442 SERIAL CARD READ/PUNCH,

           1. DEPRESS NPRO PUSHBUTTON TO RUN OUT ANY
              CARDS REMAINING IN FEED.

           2. PLACE BASIC LOADER DECK FOLLOWED BY MAIN
              PROGRAM AND ONE BLANK IN READER HOPPER.

           3. DEPRESS START PUSHBUTTON. READY INDICATOR
              SHOULD LIGHT.

BASIC DIAGNOSTIC LOADER (CARD)

        B. USING CONTROLS OF 1800 PROCESSOR CLEAR STORAGE TO
           7DFF AS FOLLOWS,

           1. SET MODE SWITCH TO RUN.

           2. SET CHECK STOP SWITCH TO OFF.

           3. SET WRITE STOR PROT BITS SWITCH TO YES.

           4. SET DATA ENTRY SWITCHES TO 7DFF.

           5. HOLD DOWN THE CLEAR STOR PUSHBUTTON AND
              DEPRESS START PUSHBUTTON TO CLEAR STORAGE.

           6. DEPRESS STOP BUTTON TO TERMINATE CLEAR
              OPERATION.

        C. AT 1800 PROCESSOR SET SWITCHES AS FOLLOWS,

           1. SET CHECK STOP SWITCH TO ON.

           2. SET WRITE STOR PROT BITS TO NO.

        D. DEPRESS RESET PUSHBUTTON.

        E. DEPRESS PROG LOAD PUSHBUTTON. CHECK THAT ONLY ONE CARD FEEDS.
           POSSIBLE FAILURES FOLLOW.

FAILURE	FAILURE / ACTION
AFTER DEPRESSION OF PROG LOAD BUTTON NO CARD FEEDS, OR MORE THAN ONE CARD FEEDS.	REPEAT LOAD PROCEDURE WITH MODE SWITCH IN SI POSITION. IF FAILURE REOCCURS A PROG LOAD FAILURE IS POSSIBLE. FEEDING MORE THAN ONE CARD COULD ALSO BE CAUSED BY FAILURE TO PERFORM WAIT INSTRUCTION (B REG=3DFF) THAT SHOULD HAVE READ INTO LOCATION 0DDD.

        F. CHECK THAT PROGRAM HAS STOPPED WITH I REG=0D01, AND B REG=3DFF.
           POSSIBLE FAILURES FOLLOW.

FAILURE	FAILURE / ACTION
PROGRAM DOES NOT STOP WITH I REG=0001 AND B REG=3DFF.	IF LOCATION 0000 CONTAINS A WAIT INSTRUCTION (30FF), EITHER THE WAIT OPERATION IS FAILING, OR PROG LOAD IS NOT SETTING THE I REGISTER TO DDDD.
PROGRAM STOPS WITH I REG=0001, BUT B REG READING IS NOT 3DFF.	THE FIRST WORD OF CARD 01 OF LOADER IS 3DFF. FIND OUT WHY THE WORD WAS NOT READ INTO LOCATION 000D.

BASIC DIAGNOSTIC LOADER (CARD)

G. DEPRESS START PUSHBUTTON. CHECK THAT ALL LOADER AND PROGRAM CARDS
     FEED, AND THAT PROGRAM BEGINS EXECUTION. POSSIBLE FAILURES FOLLOW

FAILURE	FAILURE / ACTION
PROGRAM STOPS AT WAIT WITH I REG=0001, AND B REG=30FF.	CARD 02 PROGRAM READS A CARD WHICH REMOVES WAIT FROM LOCATION 0000. AN XIO FAILURE IS INDICATED. RUN CARD 03 TO HELP ISOLATE FAILURE. (PAR. 3.2.1).
PROGRAM STOPS AT ERROR WAIT. (B REG READING BETWEEN 3001 AND 3015).	REFER TO TABLE 1- ERROR WAIT DIAGNOSTIC GUIDE.
PROGRAM STOPS AT OTHER THAN A WAIT INSTRUCTION	DETERMINE WHICH PROGRAM CAUSED FAILURE. IF MORE THAN TWO CARDS HAVE FED, FAILURE IS MOST LIKELY DUE TO LAST CARD READ.
PROGRAM RUNNING BUT CARDS DO NOT FEED.	STOP PROGRAM. DETERMINE WHICH PROGRAM IS ACTIVE. THE ACTIVE PROGRAM SHOULD BE STORED BETWEEN LOCATIONS 0000 AND 0025, OR BETWEEN LOCATIONS 0028 AND 004F. DISPLAY ACTIVE PROGRAM UNTIL A WAIT IS FOUND. DETERMINE THE PROGRAM NUMBER BY REFERENCING THE LAST 10 BITS OF THE WAIT INSTRUCTION. REFER TO LISTING FOR THE PROGRAM AND RUN IN SI MODE TO DETERMINE FAILURE. EXECUTION OF ONE-CARD PROGRAMS MAY ALSO BE HELPFUL. (PAR. 3.2.1 AND 3.2.2).

TABLE 1
ERROR WAIT DIAGNOSTIC GUIDE

WAIT		FAILURE / RECOMMENDED ACTION
B REGISTER	I REGISTER	
3001		CHECK A REGISTER. IT CONTAINS THE 1442 DSW. IF THE DSW IS OTHER THAN 0003, OR 0800, THE DSW IS IN ERROR. DEPRESS PROG LOAD BUTTON TO LOAD CARD 03 ONE-CARD PROGRAM. (CARD 03 IS AN XID TEST PROGRAM.) SEE CARD 03 TEST PROCEDURE (PARAGRAPH 3.2.1).
3002		SAME FAILURE AS 3001. PRESS PROG LOAD BUTTON TO LOAD CARD 03 TO HELP ISOLATE FAILURE. (REFER PARAGRAPH 3.2.1).

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BASIC DIAGNOSTIC LOADER (CARD)

WAIT		FAILURE / RECOMMENDED ACTION
B REGISTER	I REGISTER	
3003		THIS WAIT WILL NOT NORMALLY OCCUR WHILE LOADING A MAIN PROGRAM AS CARD 03 IS BYPASSED. REFER TO CARD 03 PROGRAM TEST PROCEDURE (PARAGRAPH 3.2.1).
3004		FAILURE OF LDX INSTRUCTION. REFER TO PROGRAM LISTING. RUN CARD 04 SEPARATELY. IF WAIT REOCCURS A SCOPING LOOP MAY BE SET UP BY REPLACING ERROR WAIT BY AN LDX /0000 INSTRUCTION (6000).
3005 3006 3007 3008	0005	READ IN FAILURE FROM CARD READER, OR BIT TRANSFER INTO A REG FAILURE, OR BSC Z INSTRUCTION FAILURE. REFER TO LISTING. SET I REG TO ADDRESS OF LD INSTRUCTION JUST BEFORE WAIT INSTRUCTION AND STEP THROUGH PROGRAM IN SI MODE TO LOCATE FAILING INSTRUCTION.
3008	000C	EOR OF ALL ONES AGAINST ALL ONES DID NOT RESULT IN A REG EQUAL 0000. REDEVELOP ERROR BY STARTING PROGRAM AT LOCATION 0000. STEP THROUGH IN SI MODE.
3008	0010	EOR OF ALL ZEROES AGAINST ALL ZEROES DID NOT RESULT IN A REG EQUAL 0000. REDEVELOP ERROR BY STARTING AT LOCATION 0000 IN SI MODE.
3009		LOAD LONG FAILURE, STORE LONG FAILURE, OR POSSIBLE EOR FAILURE. REFER TO LISTING. RUN IN SI MODE CHECKING THAT AFTER A LOAD INSTRUCTION A REG IS CORRECT, AND THAT AFTER A STORE INSTRUCTION THE A, B, AND M REGISTERS ARE CORRECT. DATA PATH TEST MAY ALSO HELP (SEE PARAGRAPH 3.5).
300A	0007	SRA 1 DROPPED THE 1 DURING THE SHIFT. FOLLOWING THIS WAIT, PROGRAM RUNS AGAIN THROUGH SAME CONDITIONS THAT CAUSED THE ERROR. STEP THROUGH IN SI MODE TO LOCATE FAILURE.
300A	0011	EOR OF A 1 IN STORAGE AGAINST A 0 IN A REG RESULTED IN A 0 IN A REG. RUN IN SI MODE TO LOCATE ERROR.

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WAIT B REGISTER	I REGISTER	FAILURE / RECOMMENDED ACTION
300A	0017	EOR OF A 0 IN STORAGE AGAINST A 1 IN A REG RESULTED IN A 0 IN A REG. RUN IN S1 MODE TO LOCATE ERROR.
300B		ADD FAILURE. SUM OF SUMPL AND SUMMI NOT EQUAL 0000. ERROR SUM IS IN A REG. DISPLAY SUMPL AND SUMMI, AND DETERMINE IF THEIR SUM SHOULD BE 0000. IF THEIR SUM SHOULD BE 0000, DIAGNOSE THE PROBLEM. IF THEIR SUM SHOULD NOT BE 0000, EITHER SUMPL OR SUMMI IS IN ERROR. RUN MANUAL ENTRY ADD TEST (PARAGRAPH 3.4).
3010		ERROR DSW DETECTED. CHECK A REG. FAILURE COULD BE IN THE 1442 READER, OR IN ITS ATTACHMENT CIRCUITRY, OR COULD BE CAUSED BY INTERMITTENT PROCESSOR FAILURES. RUN CARD 03 ONE-CARD PROGRAM.
3011	0048	WORD COUNT OF CARD JUST READ IN WAS FOUND TO BE 0000. WORD COUNT IS READ INTO LOCATION 0024. CHECK CARD JUST READ. IT SHOULD HAVE INFORMATION PUNCHED IN COLUMN 73. IF CORRECTLY PUNCHED, THE CARD CAN BE RE-LOADED BY DEPRESSING THE START BUTTON ON THE PROCESSOR CONSOLE. A READ-IN FAILURE IS POSSIBLE.
3011	0068	SUM OF LOCATION 0000 THROUGH 0026 IS NOT 0000. A REG CONTAINS THE DEVELOPED SUM. COMPARE THE CARD READ WITH ITS IMAGE IN LOCATION 0000 THROUGH 0027. IT MAY HAVE READ IN INCORRECTLY. THE SUM ROUTINE MAY BE RUN BY STARTING AT LOCATION SUM1 OF CARD 11. REFER TO LISTING. IF ERROR OCCURED ON CARD 12, REFER TO ITS LISTING. CARD 12 IS USED TO CHECK THE SUM ROUTINE.
3013		CARD 13 PROGRAM HAS DETECTED AN ERROR DSW. THE ERROR DSW IS IN THE A REG. ERROR COULD BE IN THE 1442 READER, OR IN THE DSW CIRCUITRY, OR COULD BE CAUSED BY AN INTERMITTENT FAILURE IN THE PROCESSOR. IF THE SOURCE OF ERROR IS NOT EVIDENT, RUN ONE-CARD PROGRAMS (CARDS 04 THROUGH 08).
3014		THIS WAIT IS IN A LOCATION THAT SHOULD NOT BE EXECUTED UNTIL CARD 15 IS READ. CARD 15 HAS ITS FIRST WORD STORED IN THAT LOCATION BY CARD 13. THE MOST LIKELY CAUSE OF THIS ERROR IS CARDS OUT OF SEQUENCE. THE SEQUENCE NUMBER IS PUNCHED IN COLUMNS 79 AND 80 IN HOLLERITH CODED HEXADECIMAL.

WAIT B REGISTER	I REGISTER	FAILURE / RECOMMENDED ACTION
3015		ERROR IN STORING THE PROGRAM FROM THE CARD IMAGE AREA INTO ITS PROPER PLACE IN STORAGE. AFTER THE NUMBER OF WORDS SPECIFIED BY THE WORD COUNT HAS BEEN STORED, EACH STORED WORD IS COMPARED WITH ITS CORRESPONDING IMAGE WORD TO CHECK FOR CORRECT TRANSFER. THE FAILING ADDRESS CAN BE FOUND BY REFERRING TO LISTING FOR CARD 15. (SWITCH TO DISPLAY MODE AND LOOK AT THE ADDRESS POSITION OF THE NEXT INSTRUCTION).
		IF THE ERROR OCCURRED WHILE LOADING CARD 16, REFER TO ITS LISTING. CARD 16 IS LOADED IN LOCATION 01DD AND ABOVE, AND IS DESIGNED TO AID IN DIAGNOSING FAILURES IN THE ' MOVE SECTION OF THE LOADER.

3.2   ONE-CARD PROGRAMS TEST PROCEDURE

1800 BASIC DIAGNOSTIC LOADER CARDS 03 THROUGH 08 ARE THE ONE-CARD PROGRAMS. EXCEPT FOR CARD 03 WHICH IS BYPASSED, ONE-CARD PROGRAMS ARE EXECUTED BY THE LOADER IN THE NORMAL PROCESS OF BUILDING UP THE LOADER. EACH ONE-CARD PROGRAM CAN BE RUN INDIVIDUALLY BY LOADING INTO CORE STORAGE UNDER PROGRAM LOAD MODE.

PROVIDED NO ERRORS OCCUR, EACH ONE-CARD PROGRAM RUNS CONTINUOUSLY UNTIL STOPPED BY DEPRESSION OF STOP PUSH-BUTTON ON OPERATORS CONSOLE.

ERRORS ENCOUNTERED DURING EXECUTION ARE SIGNALED BY PROGRAM STOPPING AT A UNIQUE ERROR WAIT WITH THE LAST 10 BITS OF B REGISTER CONTAINING THE PROGRAM NUMBER. FOR EXAMPLE, THE B REGISTER WILL HAVE A READING OF 3D08 IF CARD 08 PROGRAM STOPS AT AN ERROR WAIT. THE I REGISTER READING IS USED TO REFERENCE AN ERROR WAIT WHEN THERE IS MORE THAN ONE ERROR WAIT IN A PROGRAM.

3.2.1 CARD 03 PROGRAM TEST PROCEDURE

A. EXECUTE ONE-CARD PROGRAMS 04 THROUGH 08 TO BECOME REASONABLY CERTAIN PROCESSOR IS OPERATING CORRECTLY. (PAR. 3.2.2).

B. ON 1442 SERIAL CARD READ/PUNCH,

1. DEPRESS NPRO PUSHBUTTON TO CLEAR FEED.

2. PLACE CARD 03 FOLLOWED BY SUBSTANTIAL DECK OF BLANK CARDS IN HOPPER.

3. DEPRESS START PUSHBUTTON. READY INDICATOR SHOULD LIGHT.

C. ON 1800 PROCESSOR OPERATOR'S CONSOLE.

  1. SET CHECK STOP SWITCH TO ON.

  2. DEPRESS RESET PUSHBUTTON.

  3. DEPRESS PROG LOAD PUSHBUTTON. CARD 04
    SHOULD FEED, LOAD, AND BEGIN EXECUTION.

D. PROGRAM SHOULD CAUSE ONE CARD TO FEED. CHECK THAT
CARD HAS FED.

E. CHECK THAT PROGRAM HAS STOPPED AT WAIT WITH
I REGISTER READING OF 0D0B, B REGISTER READING
OF 3DD3, AND A REGISTER READING OF 0003.

IF PROGRAM DOES NOT STOP AT ABOVE MENTIONED WAIT,
CARD 03 MAY NOT HAVE LOADED CORRECTLY. REFER TO
PROGRAM LISTING AND DISPLAY EACH LOCATION.

IF A REGISTER IS NOT 0003 (CARD READER BUSY AND
NOT READY) A DSW FAILURE IS INDICATED. REFER TO
LISTING. SET UP APPLICABLE SCOPE LOOP TO AID IN
DIAGNOSIS.

IF ALL REGISTERS MENTIONED ARE CORRECT DEPRESS START
PUSHBUTTON.

F. CHECK THAT PROGRAM HAS STOPPED AT WAIT WITH I REGISTER
READING OF 000B, B REGISTER READING OF 3003, AND
A REGISTER READING OF D800.

IF A REGISTER READING IS NOT 080D (OP COMPLETE)
AN ERROR DSW IS INDICATED. SET UP APPLICABLE SCOPE
LOOP. UTILIZE AVAILABLE DIAGNOSTIC AIDS TO LOCATE THE
PROBLEM. IF REGISTERS READ CORRECTLY AND IT IS DESIRED
TO REPEAT STEPS D THROUGH F, DEPRESS RESET AND START
PUSHBUTTONS IN SUCCESSION. IF NOT, PROCEED TO STEP G.

G. DEPRESS START PUSHBUTTON.

H. PROGRAM SHOULD FEED CARDS CONTINUOUSLY AND SHOULD
NOT STOP UNLESS AN ERROR WAIT OCCURS WITH I REGISTER
READING OF 0022, B REGISTER READING OF 3003. THIS
WAIT STOP INDICATES THAT AN ERROR DSW HAS BEEN DETECTED.
THE DSW IS DISPLAYED BY THE A REGISTER. REFER TO
LISTING. DETERMINE THE DSW BITS THAT ARE IN ERROR.
THERE ARE ONLY TWO LEGAL DSW READINGS, 0003 AND 08DD.
ANY OTHER DSW READINGS ARE CONSIDERED TO BE IN ERROR
BY THE PROGRAM. SET UP APPLICABLE SCOPE LOOP.

SCOPING LOOPS MAY BE SET UP IN CARD D3 PROGRAM TO FACILITATE
SCOPING OF XIO FUNCTIONS.

SCOPE LOOP SETUP

```
*******************************************************
* TO READ CARDS CONTINUOUSLY, INSERT LDX /DD01 6001 , *
* AT LOCATION 0003.                                   *
*                                                     *
* TO READ CARD, SENSE AND RESET DSW, INSERT LDX /00D1 *
* 6001 , AT LOCATION D0D5.                            *
*                                                     *
* TO SENSE DSW CONTINUOUSLY WITHOUT CARD READING,     *
* INSERT LDX /00D3 60D3 , AT LOCATION D0D5.           *
*******************************************************
```

3.2.2 CARD 04 - 0B PROGRAMS TEST PROCEDURE

THE FOLLOWING TEST PROCEDURE DESCRIPTION APPLIES TO ANY
ONE-CARD PROGRAM FROM 04 TO 0B.

A. ON 1442 SERIAL CARD READ/PUNCH,

  1. DEPRESS NPRO PUSHBUTTON TO CLEAR FEED.

  2. PLACE ONE-CARD PROGRAM FOLLOWED BY TWO BLANK
    CARDS IN HOPPER.

  3. DEPRESS START PUSHBUTTON. READY INDICATOR
    SHOULD LIGHT.

B. ON 1800 PROCESSOR OPERATOR'S CONSOLE,

  1. DEPRESS RESET PUSHBUTTON.

  2. DEPRESS PROG LOAD PUSHBUTTON. CARD

    SHOULD FEED, LOAD, AND BEGIN EXECUTION.

THE PROGRAM WILL RUN CONTINUOUSLY UNLESS AN ERROR
OCCURS, IN WHICH CASE PROGRAM STOPS AT ERROR WAIT.
REFER TO PROGRAM LISTING AND TO TABLE 1 - ERROR
WAIT DIAGNOSTIC GUIDE.

3.3   MANUAL ENTRY ADD TEST

THIS TEST HELPS LOCATE AN ADD FAILURE THAT CANNOT BE
LOCATED WHEN RUNNING CARD 0B OF ONE-CARD PROGRAMS IN
SI MODE BECAUSE OF THE DYNAMIC NATURE OF THE PROBLEM.
IF THE CONTENTS OF SUMPL AND SUMMI DO NOT ADD TO 0D00,
THERE HAS BEEN A FAILURE IN ADDING D001 TO SUMPL
OR A FAILURE IN ADDING FFFF TO SUMMI. TO DETERMINE
WHICH OF THE TWO SUMS IS IN ERROR, IT MUST BE ASSUMED
THAT ONE OF THEM IS CORRECT IN ORDER TO ARRIVE AT THE VALUE
OF THE OTHER PRIOR TO THE FAILURE. IN OTHER WORDS, TO DETER-
MINE VALUE OF SUMPL PRIOR TO FAILURE, IT MUST BE ASSUMED
THAT PRESENT VALUE OF SUMMI IS CORRECT AND VICE VERSA.

EXECUTE ADD TEST PROGRAM AS FOLLOWS.

A. OBTAIN VALUE OF SUMPL PRIOR TO FAILURE BY DETERMINING
TWO'S COMPLEMENT OF (SUMMI - FFFF).

B. OBTAIN VALUE OF SUMMI PRIOR TO FAILURE BY DETERMINING
TWO'S COMPLEMENT OF (SUMPL - D001).

C. LOAD FOLLOWING PROGRAM BY MEANS OF CONSOLE ENTRY
SWITCHES.

BASIC DIAGNOSTIC LOADER (CARD)

NOTE

ALL NUMBERS SHOWN BELOW ARE IN HEXADECIMAL NOTATION.

LOCATION	CONTENTS	MNEMONIC	COMMENTS
0000	VALUE OF SUMPL PRIOR TO ERROR		WILL BE IN ACCUMULATOR WHEN ADD OCCURS.
0001	0001		WILL BE ADDED TO ACCUMULATOR DURING ADD.
0002	CORRECT SUM OF ADDITION		USED TO CHECK ADD OPERATION.
0003	C0FC	LD	LOAD ACCUMULATOR FROM LOCATION 0000.
0004	80FC	A	ADD CONTENTS OF LOCATION 0001 TO ACCUMULATOR.
C005	F0FC	EOR	EOR ACCUMULATOR WITH CORRECT ANSWER.
0006	4B20	BSC Z	SKIP ON ZERO TO LOCATION 0008.
0007	3000	WAIT	WAIT. AN ERROR HAS OCCURED.
0008	6003	LDX	BRANCH TO LOCATION 0003.

     D. LOAD I REGISTER WITH 0003.

     E. RUN PROGRAM IN RUN MODE. AN ADD FAILURE WILL
        CAUSE PROGRAM TO STOP AT WAIT INSTRUCTION WITH
        I REGISTER INDICATOR INDICATING 0008.

     F. IF PROGRAM RUNS CONTINUOUSLY WITHOUT ERRORS,

        1. DEPRESS STOP PUSHBUTTON.

        2. LOAD LOCATION 0000 WITH VALUE OF SUMMI
          PRIOR TO ERROR.

        3. LOAD LOCATION 0001 WITH FFFF.

        4. LOAD LOCATION 0002 WITH CORRECT SUM OF
          SUMMI PLUS FFFF.

        5. RUN AGAIN IN RUN MODE.

3.4   MANUAL ENTRY DATA-PATH TEST

     THIS TEST IS LOADED USING THE DATA ENTRY SWITCHES
     AND TESTS THE ABILITY OF THE 1800 PROCESSOR TO TRANSFER ONES
     AND ZEROES BETWEEN THE FOLLOWING REGISTERS.

     A. FROM B TO D TO A TO M TO I REGISTER.

     B. FROM A TO U TO A REGISTER.

     C. FROM A REGISTER TO B REGISTER.

     D. FROM I REGISTER TO B REGISTER.

     E. FROM I REGISTER TO A REGISTER.

BASIC DIAGNOSTIC LOADER (CARD)

     TEST PROCEDURE

     A. USING CONTROLS OF 1800 PROCESSOR, CLEAR STORAGE TO
        WAIT INSTRUCTION (33FF). SEE PARAGRAPH 3.1 .

     B. ENTER THE FOLLOWING PROGRAM USING DATA ENTRY SWITCHES.

LOCATION	CONTENTS	MNEMONIC	COMMENTS
FFFA	C006	LD	LOAD ACCUMULATOR WITH CONTENTS OF LOCATION 0001.
FFFB	44B0	BSI I	STORE CONTENTS OF I COUNTER (FFF0) AT ADDRESS STORED IN LOCATION FFF0. SET I COUNTER TO THAT ADDRESS AND ADD ONE TO I COUNTER.
FFFC	FFF0		ADDRESS POSITION OF BSI I INSTRUCTION
FFFD	FFF0		THIS IS THE ACTUAL BRANCH ADDRESS FOR THE BSI I INSTRUCTION AND IS REPLACED BY THE BSI I.
FFFE	D002	STO	STORE CONTENTS OF ACCUMULATOR AT LOCATION 0001 (SHOULD NOT CHANGE).
FFFF	C0FC	LD	LOAD ACCUMULATOR WITH CONTENTS OF LOCATION FFFC.
0000	44B0	BSI I	STORE CONTENTS OF I COUNTER (0002) AT ADDRESS STORED IN LOCATION 0002. SET I COUNTER TO THAT ADDRESS AND ADD ONE TO I COUNTER.
0001	0002		THIS IS ADDRESS POSITION OF BSI I INSTRUCTION.
0002	0002		THIS IS THE ACTUAL BRANCH ADDRESS FOR THE BSI I INSTRUCTION AND IS REPLACED BY THE BSI I INSTRUCTION.
0003	D0F8	STO	STORE CONTENTS OF ACCUMULATOR AT LOCATION FFFC (SHOULD NOT CHANGE).
0004	70F5	MDX	BRANCH TO LOCATION FFFA.

     C. LOAD I REGISTER WITH FFFA.

     D. STEP THROUGH PROGRAM IN SI MODE, CHECKING THAT
        PROGRAM LOOPS PROPEPLY. ANY DATA-PATH ERROR SHOULD
        RESULT IN THE IMPROPER BRANCHING OF A BSI I INSTRUCION
        AND STOPPING AT A WAIT INSTRUCTION. THE LOCATION
        BEFORE THE WAIT INSTRUCTION SHOULD CONTAIN THE CON-
        TENTS OF I REGISTER WHEN THE BRANCH OCCURRED.
        LOGICAL RECONSTRUCTION OF THE ERROR SHOULD ISOLATE
        A DATA-TRANSFER ERROR AND SUGGEST THE CIRCUIT CARD
        CAUSING THE ERROR.

NOTE

A BRANCH OUTSIDE OF THE PROGRAM INTO A CORE
LOCATION LOADED WITH 33FF INDICATES AN
ERROR HAS OCCURRED. SUBTRACT TWO FROM I
REGISTER INDICATOR READING AND DISPLAY THAT
LOCATION. THE CONTENT OF LOCATION DISPLAYED
IS THE I REGISTER SETTING WHEN THE ERRONEOUS
BRANCH OCCURED. IF THE BRANCH WAS CAUSED BY
A BSI I INSTRUCTION FAILURE, THE LOCATION JUST
CHECKED WILL HAVE A VALUE, BY ONE, THAN THE
ADDRESS OF THE SECOND WORD OF THE BSI I INSTRUC-
TION. IF THIS IS THE CASE, DISPLAY LOCATIONS WHERE
PROGRAM IS STORED TO DETERMINE IF THE LOCATIONS
HAVE CHANGED. THE ADDRESSES OF BSI I INSTRUC-
TION ARE STORED BY THE STO INSTRUCTIONS, AND
THE LOCATIONS FFFD AND 00D2 ARE STORED
BY THE BSI I INSTRUCTIONS. STATIC OR INTERMITTENT
DATA-TRANSFER ERRORS SHOULD BE READILY DETECTED
BY THIS MEANS, AND BE EASY TO ISOLATE BECAUSE OF
THE UNIQUE FAILURE INDICATIONS.

ERRORS IN THE DATA PATH PROGRAM SHOULD BE CAUSED
BY SINGLE BIT FAILURES, OR BY HALF-WORD FAILURES.
THUS, DROPPED OR ADDED BITS CAN BE REFERENCED
DIRECTLY TO A CIRCUIT CARD. SWAP INDICATED
CIRCUIT CARD TO SEE IF FAILURE CHANGES.

THE Q, U, A, AND D REGISTERS CIRCUIT CARDS
ARE LOCATED IN ROW 4 OF THE CARD GATE, AND ARE
INTERCHANGEABLE.

THE I, B, AND M REGISTERS CIRCUIT CARDS ARE
LOCATED IN ROW 6 OF THE CARD GATE, AND ARE
INTERCHANGEABLE.

FAILING BIT- 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

COLUMN----- C   D   E   F   G   H   J   K

THE FOLLOWING CARDS CONTROL HALF-WORD TRANSFERS
AND ARE INTERCHANGEABLE.

M4, M5, M7, L5, AND L6.

PROGRAM DESCRIPTION

THE LD INSTRUCTION AT LOCATION FFFA PERFORMS THE FUNCTION
OF SETTING THE ACCUMULATOR TO 00D2 SO THAT WHEN THE FOLLOWING
BSI I INSTRUCTION IS PERFORMED, A COMPLEMENT BIT PATTERN
(FFFD) WILL BE SENT THROUGH THE A REGISTER, THUS TESTING
THAT THE A REGISTER IS RETURNED TO 00D2 AT THE END OF
THE BSI I INSTRUCTION. THIS TEST IS ACCOMPLISHED BY STORING
THE CONTENTS OF THE A REGISTER BACK INTO LOCATION D001 AFTER
THE BSI I INSTRUCTION. THE SAME PHILOSOPHY IS USED DURING
BSI I INSTRUCTION AT LOCATION 00DD BY SETTING THE A REGISTER
TO FFFD WHILE 00D2 IS SENT THROUGH IT DURING THE BSI I INSTRUC-
TION. A FAILURE OF EITHER BSI I INSTRUCTION THAT AFFECTS THE
A REGISTER WILL CAUSE THE FOLLOWING BSI I INSTRUCTION TO TAKE
ITS ADDRESS FROM THE WRONG LOCATION. THIS LOCATION WILL
PROBABLY BE ONE OF THE CORE LOCATIONS LOADED WITH 33FF, THUS
CAUSING THE PROGRAM TO STOP.

4. PRINTOUTS (NONE)

5. COMMENTS

    5.1   BASIC DIAGNOSTIC LOADER PHILOSOPHY

    THE 1800 BASIC DIAGNOSTIC LOADER IS A SELF-CHECKING PROGRAM
    USED TO LOAD THE PROCESSOR DIAGNOSTIC PROGRAMS, AND TO VERIFY
    THEIR CORRECT LOADING. THE LOADER CONTAINS ONE-CARD PROGRAMS
    USED AS AIDS IN DIAGNOSIS OF BASIC FAILURES IN THE PROCESSOR.
    THESE ONE-CARD PROGRAMS NUMBERED 03 THROUGH 0B IN COLUMNS
    79 AND 80 ARE NORMALLY EXECUTED WHILE IN THE PROCESS OF
    LOADING AND BUILDING OF THE LOADER. CARD 03 IS BYPASSED.

    TABLE 3 CONTAINS A BREAKDOWN OF THE 1800 BASIC DIAGNOSTIC
    LOADER. CARD NUMBER, LOCATION IN STORAGE AND FUNCTION OF
    EACH CARD ARE SHOWN.

    THE FINAL LOADER USED TO LOAD THE MAIN PROGRAM CONSISTS OF
    THE COMBINED PROGRAMS OF CARDS 02, 11, 14 AND 15. CARDS 01,
    1D, 12, 13, AND 16 ARE USED IN THE PROCESS OF BUILDING AND
    CHECKING THE LOADER. CARDS 03 THROUGH 0B ARE ONE-CARD
    PROGRAMS USED TO CHECK SPECIFIC PROCESSOR FUNCTIONS.

    THE FINAL LOADER PERFORMS THE FOLLOWING FUNCTIONS.

    A. READS A CARD INTO LOCATION 0000 TO 0D27.

    B. CONTINUOUSLY CHECKS DSW WAITING FOR AN OP COMPLETE.
        ANY ERROR DSW IS SIGNALED BY PROGRAM STOPPING AT A
        SPECIFIED ERROR WAIT INSTRUCTION.

    C. CHECKS WORD COUNT AFTER OP COMPLETE IS RECEIVED.
        WORD COUNT MUST NOT BE ZERO. IF A WORD COUNT OF ZERO IS
        DETECTED PROGRAM STOPS AT ERROR WAIT.

    D. FORMS CHECK SUM OF LOCATIONS 0D00 THROUGH 0026. THE
        DEVELOPED CHECK SUM MUST BE 0D00 OR PROGRAM STOPS AT
        ERROR WAIT.

    E. CHECKS LOCATION 0025 FOR STARTING ADDRESS WHERE WORDS
        MUST BE STORED INTO. IF THE ADDRESS IS DD00 PROGRAM
        ASSUMES LAST CARD OF PROGRAM HAS BEEN READ AND
        CONSEQUENTLY BRANCHES TO LOCATION 0DDD TO BEGIN EXECU-
        TION OF MAIN PROGRAM. IF THE ADDRESS IS NOT 0DDD
        PROGRAM MOVES THE NUMBER OF WORDS SPECIFIED BY THE
        WORD COUNT FROM IMAGE AREA (0000 - 0D27) TO
        ADDRESS SPECIFIED IN LOCATION 0025, AND ABOVE.

    F. COMPARES (EOR) EACH WORD MOVED FROM IMAGE AREA WITH
        THE CORRESPONDING WORD AT THE NEW LOCATION. FAILURE OF
        ANY ONE WORD TO COMPARE RESULTS IN ERROR WAIT INDICATING
        A TRANSFER ERROR.

    G. REPEATS ENTIRE PROCEDURE FOR EVERY CARD.

TABLE 2
REFERENCE DATA

CARD NO.	STORAGE LOCATION	FUNCTION / COMMENTS	LOADED BY
01	0000-0027	LOADS CARD 02	PROGRAM LOAD
02	0028-004F	LOADS CARDS 03 - 10	CARD 01
03	0000-0027	XIO TEST. NORMAL LOAD BYPASSES THIS CARD. TO EXECUTE, LOAD CARD 03 UNDER PROGRAM LOAD.	CARD 02
04	0000-0027	LDX TEST. MAY BE LOADED UNDER PROGRAM LOAD.	CARD 02
05	0000-0027		
06	0000-0027	TESTS READ IN FROM CARD READER, LOAD LONG, BSC Z AND EOR. EACH CARD MAY BE LOADED SEPARATELY UNDER PROGRAM LOAD.	CARD 02
07	0000-0027		
08	0000-0027		
09	0000-0027	DATA PATH TEST. MAY BE LOADED UNDER PROGRAM LOAD.	CARD 02
0A	0000-0027	EOR TEST. MAY BE LOADED UNDER PROGRAM LOAD.	CARD 02
0B	0000-0027	ADD TEST. MAY BE LOADED UNDER PROGRAM LOAD.	CARD 02
10	0000-0027	READS CARD 11 OVER PART OF CARD 02 PROGRAM.	CARD 02
11	0046-0068	WITH LOCATIONS 0028-0045 OF CARD 02, BECOMES LOADER FOR CARDS 12 AND 13.	CARD 10
12	0000-0027	DATA TO CHECK THAT CARD 02 AND 11 COMBINED PROGRAM IS CORRECT.	CARD 02 AND 11
13	0000-0027	READS CARDS 14 AND 15.	CARD 02 AND 11
14	0068-0089	MOVES CARD IMAGE TO SPECIFIED LOCATION.	CARD 13
15	0089-00A7	VERIFIES TRANSFER OF MOVED WORDS.	CARD 13
16	0100-0123	DATA CARD TO CHECK THAT FINAL LOADER IS WORKING PROPERLY.	CARDS 02, 11, 14 AND 15. (FINAL LOADER)

5.2   DESCRIPTION OF ONE-CARD PROGRAMS

ONE-CARD PROGRAMS ARE NUMBERED 03 THROUGH 08, AND MAY BE RUN INDIVIDUALLY BY LOADING UNDER PROGRAM LOAD MODE. PROGRAMS 04 THROUGH 08 ARE EXECUTED ONCE WHILE LOADING THE BASIC LOADER TO INSURE THAT THE FUNCTIONS TESTED BY THESE ONE-CARD PROGRAMS ARE FUNCTIONING PROPERLY. PROGRAM 03 IS BYPASSED BY THE BASIC LOADER.

5.2.1   THE CARD 03 PROGRAM IS A TWO PART PROGRAM. PART 1 READS A CARD, RESETS DSW, SENSES DSW AND STOPS ON WAIT TO PERMIT OPERATOR TO VERIFY THAT THE DSW IS CORRECT. FOLLOWING DEPRESSION OF START PUSHBUTTON, THE PROGRAM SENSES AND RESETS THE DSW AND STOPS ON WAIT TO ALLOW VERIFICATION OF DSW. IF NO ERRORS ARE ENCOUNTERED, PART 2 MAY BE EXECUTED. PART 2 CAUSES CARDS TO FEED CONTINUOUSLY AND CHECKS THE DSW. IF ANY DSW ERRORS ARE ENCOUNTERED, PROGRAM STOPS ON WAIT WITH A REGISTER DISPLAYING THE RESULT OF AN EOR OF THE ERROR DSW WITH 0800.

5.2.2   THE CARD 04 PROGRAM PERFORMS A TEST OF THE LDX INSTRUCTION. INCORRECT OPERATION OF THE LDX INSTRUCTION CAUSES PROGRAM TO BRANCH TO AN ERROR WAIT. THE B REGISTER READING FOR THE ERROR WAIT MAY BE 3004 IF THE BRANCH OCCURS WITHIN THE PROGRAM, OR 33FF IF PROGRAM IS MADE TO BRANCH OUTSIDE OF THE PROGRAM.

5.2.3   CARD 05, 06, 07 AND 08 TEST THAT EACH BIT POSITION OF THE A REGISTER CAN BE LOADED WITH A 1 AND A 0. AN ERROR IN LOADING THE A REGISTER CAUSES AN ERROR WAIT. THE BSC Z INSTRUCTION IS ALSO TESTED. FAILURE OF THE BSC Z INSTRUCTION WOULD CAUSE AN ERROR WAIT STOP. CARD 05 TESTS BIT POSITIONS 0 THROUGH 4. CARD 06 TESTS BIT POSITIONS 5 THROUGH 9. CARD 07 TESTS BIT POSITIONS 10 THROUGH 14.

CARD 08 TESTS BIT POSITION 15 AND IN ADDITION CHECKS THAT EOR OF FFFF AND FFFF RESULTS IN A REGISTER EQUAL 0000, AND THAT EOR OF 0000 AND 0000 ALSO RESULTS IN A REGISTER EQUAL 0000. FAILURE OF EOR CAUSES PROGRAM TO STOP ON ERROR WAIT.

5.2.4   CARD 09 PROGRAM IS A TEST OF DATA TRANSFER BETWEEN REGISTERS. THE TEST TRANSFERS CONSTANTS 3333 AND CCCC ALTERNATELY BETWEEN B-D-A-V-A-B AND B-D-A-M REGISTERS BY PERFORMING LOAD, AND STORE INSTRUCTIONS. FAILURE TO OBTAIN EXPECTED RESULTS CAUSES PROGRAM TO STOP ON ERROR WAIT.

5.2.5   THE CARD 0A PROGRAM IS A TEST OF EOR ACCOMPLISHED BY TESTING EACH BIT POSITION FOR THE FOLLOWING CONDITIONS.

A = 0   D = 1   A AND D CORRESPOND TO
A = 1   D = 0   BIT POSITIONS IN THE A AND
                  B REGISTERS.
FAILURE OF EOR RESULTS IN PROGRAM STOPPING ON ERROR WAIT.

5.2.6   CARD 0B PROGRAM IS A TEST OF THE ADD OPERATION. THE TEST ADDS FFFF TO CONTENTS OF SYMBOLIC LOCATION SUMMI, ADDS 0001 TO CONTENTS OF SYMBOLIC LOCATION SUMPL, AND ADDS CONTENTS OF SUMMI AND SUMPL. IF THE RESULTANT SUM IS 0000 THE ENTIRE PROCEDURE IS REPEATED. IF THE SUM IS NOT 0000 THE PROGRAM STOPS ON ERROR WAIT.

6. APPENDIX (NONE)

```
3001                      ABS
                          ORG     /3001                            8B900020
                    *                                              8B900030
                                                                   8B900040
                    *XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX       8B900050
                    *XXXXXXXXXXXXXXXX PRDGRAMMED WAITS IN THIS  X   8B900060
                    *XXXXXXXXXXXXXXXX PROGRAM                   X   8B900070
                    *XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX   8B900080
                    *                                              8B900090
3001 0 014C              OC      WAIT1&1     WAIT FOR OATA ENTRY    8B900100
                    *                        SWITCHES TD BE SET.    8B900110
                    *                        PUSH START TO          8B900120
                    *                        CDNTINUE THE PROGRAM.  8B900130
                    ***************************************         8B900140
                    *                                              8B900150
3002 0 03B8              DC      WAIT2&1     WAIT BEFORE RDUTINE,   8B900160
                    *                        TERMINATE PROGRAM OR   8B900170
                    *                        HALT ON ERROR.  IF     8B900180
                    *                        HALT ON ERRDR OR       8B900190
                    *                        TERMINATE PROGRAM,     8B900200
                    *                        A PRINTDUT WILL OCCUR  8B900210
                    *                        BEFORE THE WAIT.       8B900220
                    *                        PUSH START TO CONTINUE 8B900230
                    *                        OR RESTART.            8B900240
                    ***************************************         8B900250
                    *                                              8B900260
3003 0 047B              DC      WAIT3&1     1443 PRINTER IS NOT    8B900270
                    *                        REAOY.  MAKE PRINTER   8B900280
                    *                        READY AND PUSH START.  8B900290
                    ***************************************         8B900300
                    *                                              8B900310
3004 0 0627              DC      WAIT4&1     WAIT BECAUSE TYPE-     8B900320
                    *                        WRITER IS NOT REAOY.   8B900330
                    *                        MAKE TYPEWRITER READY  8B900340
                    *                        AND PUSH START TD      8B900350
                    *                        CDNTINUE PROGRAM.      8B900360
                    ***************************************         8B900370
                    *                                              8B900380
3005 0 07A8              OC      WAIT5&1     LOST INTRPT. AFTER     8B900390
                    *                        TIMEO WRT DR RD.       8B900400
                    ***************************************         8B900410
                    *                                              8B900420
3006 0 07DF              OC      WAIT6&1     LOST INTRPT. AFTER BSP 8B900430
                    ***************************************         8B900440
                    *                                              8B900450
3007 0 3007              DC      /3007       NDT USED               8B900460
3008 0 3008              OC      /3008       NOT USED               8B900470
                    ***************************************         8B900480
                    ***************************************         8B900490
                    *                                              8B900500
                    *                                              8B900510
                    *                        ON ALL LOST INTERRUPT  8B900520
                    *                        WAITS, PUSH RESET      8B900530
                    *                        ANO START TD RESTART.  8B900540
                    ***************************************         8B900550
                    ***************************************         8B900560
                    *                                              8B900570
3009 0 0371              DC      WAIT9&1     NO LEGAL OSW BIT ON    8B900580
                    *                        AT INTERRUPT.  PUSH    8B900590
                    *                        RESET ANO START TO     8B900600
                    *                        RESTART PROGRAM.       8B900610
                    ***************************************         8B900620
                    *                                              8B900630
300A 0 0373              OC      WAITA&1     BLANK ILSW AT          8B900640
                    *                        INTERRUPT.  PUSH       8B900650
                    *                        RESET AND START        8B900660
                    *                        TO RESTART THE PROGRAM.8B900670
                    ***************************************         8B900680
                    *XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX   8B900690
```

```
                    *                                              8B900700
012C                      DRG     300                              8B900710
012C 0 B900               DC      /B900       PIO                  8B900720
                    *XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX   8B900730
                    *XXXXXXXXXXXXXXXX RDUTINE TD READ EDIT CARDSX   8B900740
                    *XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX   8B900750
                    *                                              8B900760
012D 0 6700 0132    BEGN    LOX   L3 BEGN1    IX 3 # LOR RETURN     8B900770
012F 0 6F00 0124            STX   L3 /0124    STORE IN LOR          8B900780
0131 0 6050                 LOX   X  /0050    GD TD LDAOER          8B900790
0132 0 63F9         BEGN1   LOX   3 -7        IX # NO ENTRIES       8B900800
0133 0 C30A         BEGN2   LD    3 10        GET AN ENTRY          8B900810
0134 0 0700 02ED           STD   L3 EDIT&9   SET IN EDIT FIELD     8B900820
0136 0 7301                 MOX   3 1         OECR IX               8B900830
0137 0 70FB                 MOX      BEGN2    LDOP                  8B900840
0138 0 6700 0130            LOX   L3 BEGAP    IX 3 # LDR RETURN     8B900850
013A 0 6F00 0124            STX   L3 /0124    STORE IN LOADER       8B900860
013C 0 6050                 LDX   X  /0050    GO TD LDAOER          8B900870
0130 0 631A         BEGAP   LOX   3 26        IX # NO LVLS          8B900880
013E 0 C00F                 LD       BEGX3    GET CDMMDN INTR TRAP  8B900890
013F 0 0700 0008    BEGBA   STO   L3 8        SET                  8B900900
0141 0 73FF                 MDX   3 -1        DECR IX REG           8B900910
0142 0 70FC                 MDX      BEGBA    LDOP                 8B900920
0143 0 CC00 02D8            LOD   L  BEGX4    SET RESTART          8B900930
0145 0 0C00 0000            STD   L  0        *                    8B900940
0147 0 C400 02EE            LD    L  ACTI&1   GET INTRPT RTN ADRS  8B900950
0149 0 0480 02E7            STD   I  EDIT&3   SET FOR TAPES        8B900960
014B 0 3001         WAIT1 WAIT       1        WAIT FOR SWS         8B900970
014C 0 4C00 02EF            BSC   L  MDNT                          8B900980
014E 0 0332         BEGX3 OC         SVINT     COMMON INTR TRAP    8B900990
                    *                                              8B901000
                    *                          RESTORE PRDGRAM TD 4 8B901010
                    *                          MICRDSEC MEM AND MOD 3 DRS 8B901020
                    *                                              8B901030
014F 0 0000         BEGIN DC         0                         SE  8B901040
0150 0 6373               LOX   3 115                              8B901050
0151 0 C700 0157    BEGAN LO    L3 BEGX8-1   GET BASE CDNSTANT     8B901060
0153 0 D700 066C          STO   L3 CDN-1     SET                   8B901070
0155 0 73FF               MDX   3 -1         OECR IX               8B901080
0156 0 70FA               MOX      BEGAN     LOOP                  8B901090
0157 0 7073               MOX      BEGAC                           8B901100
0158 0 0308         BEGX8 DC         776      RESTORE CONSTANTS    8B901110
0159 0 0712               OC         1810                          8B901120
015A 0 0308               DC         776                           8B901130
015B 0 048B               OC         1163                          8B901140
015C 0 0080               OC         128                           8B901150
0150 0 012F               OC         303                           8B901160
015E 0 0080               OC         128                           8B901170
015F 0 00C3               DC         195                           8B901180
0160 0 00F8               OC         248                           8B901190
0161 0 0131               OC         305                           8B901200
0162 0 00F5               OC         245                           8B901210
0163 0 012E               OC         302                           8B901220
0164 0 01E0               OC         480                           8B901230
0165 0 0003               DC         3                             8B901240
0166 0 0040               DC         3392                          8B901250
0167 0 0002               DC         2                             8B901260
0168 0 7100               DC         28928                         8B901270
0169 0 0001               DC         1                             8B901280
016A 0 D4C0               DC         54464                         8B901290
016B 0 0001               DC         1                             8B901300
016C 0 3880               OC         14464                         8B901310
016D 0 0000               OC         0                             8B901320
016E 0 9C40               OC         40000                         8B901330
016F 0 0000               DC         0                             8B901340
0170 0 4E20               DC         20000                         8B901350
0171 0 0000               OC         0                             8B901360
0172 0 3E80               DC         16000                         8B901370
```

2400 TIMING TEST

```
0173 0 0000        OC    0              8B901380
0174 0 2EE0        DC    12000          8B901390
0175 0 0000        DC    0              8B901400
0176 0 1F40        OC    8000           8B901410
0177 0 0000        DC    0              8B901420
0178 0 0FA0        DC    4000           8B901430
0179 0 0000        DC    0              8B901440
017A 0 0C80        DC    3200           8B901450
017B 0 0000        DC    0              8B901460
017C 0 0960        DC    2400           8B901470
017D 0 0000        DC    0              8B901480
017E 0 0640        DC    1600           8B901490
017F 0 0000        DC    0              8B901500
0180 0 0578        OC    1400           8B901510
0181 0 0000        DC    0              8B901520
0182 0 04B0        DC    1200           8B901530
0183 0 0000        DC    0              8B901540
0184 0 03E8        DC    1000           8B901550
0185 0 0000        DC    0              8B901560
0186 0 0384        DC    900            8B901570
0187 0 0000        DC    0              8B901580
0188 0 0320        DC    800            8B901590
0189 0 0000        DC    0              8B901600
018A 0 02BC        DC    700            8B901610
018B 0 0000        DC    0              8B901620
018C 0 0258        DC    600            8B901630
018D 0 0000        DC    0              8B901640
018E 0 01F4        DC    500            8B901650
018F 0 0000        DC    0              8B901660
0190 0 0190        DC    400            8B901670
0191 0 0000        DC    0              8B901680
0192 0 0168        DC    360            8B901690
0193 0 0000        DC    0              8B901700
0194 0 0140        DC    320            8B901710
0195 0 0000        DC    0              8B901720
0196 0 0118        DC    280            8B901730
0197 0 0000        DC    0              8B901740
0198 0 00F0        DC    240            8B901750
0199 0 0000        DC    0              8B901760
019A 0 00DC        DC    220            8B901770
019B 0 0000        DC    0              8B901780
019C 0 00C8        DC    200            8B901790
019D 0 0000        DC    0              8B901800
019E 0 00B4        DC    180            8B901810
019F 0 0000        DC    0              8B901820
01A0 0 00A0        DC    160            8B901830
01A1 0 0000        DC    0              8B901840
01A2 0 008C        DC    140            8B901850
01A3 0 0000        DC    0              8B901860
01A4 0 0078        DC    120            8B901870
01A5 0 0000        DC    0              8B901880
01A6 0 006E        DC    110            8B901890
01A7 0 0000        DC    0              8B901900
01A8 0 0064        DC    100            8B901910
01A9 0 0000        DC    0              8B901920
01AA 0 005A        DC    90             8B901930
01AB 0 0000        DC    0              8B901940
01AC 0 0050        DC    80             8B901950
01AD 0 0000        DC    0              8B901960
01AE 0 0046        DC    70             8B901970
01AF 0 0000        DC    0              8B901980
01B0 0 003C        DC    60             8B901990
01B1 0 0000        DC    0              8B902000
01B2 0 0032        DC    50             8B902010
01B3 0 0000        DC    0              8B902020
01B4 0 002C        DC    44             8B902030
01B5 0 0000        DC    0              8B902040
01B6 0 0028        DC    40             8B902050
```

2400 TIMING TEST

```
01B7 0 0000        OC    0              8B902060
01B8 0 0024        OC    36             8B902070
01B9 0 0000        OC    0              8B902080
01BA 0 0020        OC    32             8B902090
01BB 0 0000        OC    0              8B902100
01BC 0 001C        DC    28             8B902110
01BD 0 0000        DC    0              8B902120
01BE 0 0018        DC    24             8B902130
01BF 0 0000        DC    0              8B902140
01C0 0 0016        DC    22             8B902150
01C1 0 0000        DC    0              8B902160
01C2 0 0014        DC    20             8B902170
01C3 0 03C0        DC    960            8B902180
01C4 0 0780        DC    1920           8B902190
01C5 0 4D92        OC    19858          8B902200
01C6 0 0003        DC    3              8B902210
01C7 0 0000        DC    0              8B902220
01C8 0 0025        DC    37             8B902230
01C9 0 004B        DC    75             8B902240
01CA 0 0070        OC    112            8B902250
                   *                    8B902260
                   *XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX  8B902270
                   *XXXXXXXXXXXXXXXX EDIT ROUTINE XXXXXXXXXXXXXXX  8B902280
                   *XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX  8B902290
                   *                    8B902300
                   *                    8B902310
                   *          SET PROGRAM TO MEM SPEED    8B902320
                   *                    8B902330
                   *                    8B902340
01CB 0 C400 02EC   BEGAC LD  L  EDIT&8    GET MEM SPEED   8B902350
01CD 0 4C30 0202         BSC  L  BEGAD-1,Z- BR IF 4.00 US  $ 8B902360
01CF 0 4C10 020F         BSC  L  BEGAE,-   BR IF 2.00 US   $ 8B902370
01D1 0 636F             LDX  3 111                        $ 8B902380
01D2 0 10A0      BAK    SLT  32           SETUP           $ 8B902390
01D3 0 C700 066C        LD   L3 SPEC      CONSTANTS       $ 8B902400
01D5 0 1882            SRT  2            FOR             $ 8B902410
01D6 0 A00B            M    ARIA1+1      2.25 US MEMORY  $ 8B902420
01D7 0 A80B            D    ARIA1+2                      $ 8B902430
01D8 0 1002            SLA  2                            $ 8B902440
01D9 0 D700 066C        STO  L3 SPEC                     $ 8B902450
01DB 0 73FF             MDX  3 -1                        $ 8B902460
01DC 0 70F5             MDX  BAK                         $ 8B902470
01DD 0 C006             LD   ARIA1+3                     $ 8B902480
01DE 0 D400 06DC        STO  L  MLGX7                    $ 8B902490
01E0 0 7005             MDX  PART2        BR TO CONT. SETUP $ 8B902500
01E1 0 FFFF      ARIA1  DC   /FFFF        X              $ 8B902510
01E2 0 000F             DC   /000F        T              $ 8B902520
01E3 0 0011             DC   /0011        N              $ 8B902530
01E4 0 0025             DC   /0025        T              $ 8B902540
01E5 0 FFFF             DC   /FFFF        S              $ 8B902550
                   *                                     $ 8B902555
01E6 0 C811      PART2  LDD  ARIA5        SETUP          $ 8B902560
01E7 0 DC00 067A        STD  L  MT5X0     SPECIAL        $ 8B902570
01E9 0 C810            LDD  ARIA5+2      DOUBLE         $ 8B902580
01EA 0 DC00 067C        STO  L  MT5X0+2   WORD           $ 8B902590
01EC 0 C80F            LOD  ARIA5+4      CONSTANTS      $ 8B902600
01ED 0 DC00 067E        STD  L  MT5X0+4                 $ 8B902610
01EF 0 C80E            LDD  ARIA5+6                     $ 8B902620
01F0 0 DC00 0680        STD  L  MT5X0+6                 $ 8B902630
01F2 0 C00D            LD   ARIA5+8                     $ 8B902640
01F3 0 D400 06DB        STO  L  GPHLM                   $ 8B902650
01F5 0 6400 0213        LDX  L  BEGAF                   $ 8B902660
01F8   0000            BSS  E  0                        $ 8B902670
01F8 0 0002      ARIA5  DC   /0002        D    C        $ 8B902680
01F9 0 B150            DC   /B150        O  W  O        $ 8B902690
01FA 0 0002            DC   /0002        U  O  N        $ 8B902700
01FB 0 2778            DC   /2778        B  R  S        $ 8B902710
01FC 0 0001            DC   /0001        L  D  T        $ 8B902720
```

'ATE   01JUL66   01NOV66   15MAY67   01SEP67   01OCT67   14NOV69   30JAN70   PROG ID   08B9-2
EC NO. 415178   415233   411731   411857   411875   431319   431319A   PAGE   2

'ATE   01JUL66   01NOV66   15MAY67   01SEP67   01OCT67   14NOV69   30JAN70   PROG ID   08B9-2
EC NO. 415178   415233   411731   411857   411875   431319   431319A   PAGE   2A

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01FD 0 9098        DC     /9098     E    A      $ 8B902730
01FE 0 0001        DC     /0001     N           $ 8B902740
01FF 0 13B8        DC     /13B8     T           $ 8B902750
0200 0 0002        DC     /0002     S           $ 8B902760
0201 0 FFFF        DC     /FFFF                 $ 8B902770
*                                               $ 8B902775
0202 0 636F        LDX    3 111                   8B902780
0203 0 C700 066C   BEGAD LD  L3 CON-1  GET A CONSTANT  8B902790
0205 0 1801        SRA    1          DVD BY 2     8B902800
0206 0 D700 066C   STO    L3 CON-1   SET          8B902810
0208 0 73FF        MDX    3 -1       OECR IX      8B902820
0209 0 70F9        MDX    BEGAO      LOOP         8B902830
020A 0 C400 066B   LD  L  CONV1      GET CONV CONSTANT 8B902840
020C 0 0400 060C   STO L  MLGX7      SET          8B902850
020E 0 7004        MDX    BEGAF                   8B902860
*                                                 8B902870
*                  MEMORY SPEEO IS 2 MICROSEC     8B902880
*                                                 8B902890
020F 0 C400 066A   BEGAE LD  L CONV   GET CONV CONSTANT 8B902900
0211 0 D400 060C   STO L  MLGX7                   8B902910
*                                                 8B902920
*                  EDIT TO ORIVE MOOEL            8B902930
*                                                 8B902940
0213 0 C500 02EA   BEGAF LD  L1 EDIT&6  GET OR MODEL 8B902950
0215 0 4808        BSC    &          ARE THEY MOD 3 8B902960
0216 0 7052        MDX    BEGAM      YES          8B902970
0217 0 F400 036E   EOR L  ONE                     8B902980
0219 0 4820        BSC    Z          ARE THEY MOD 1 8B902990
021A 0 7076        MDX    BEGAI      NO           8B903000
*                                                 8B903010
*                  SET PROGRAM TO MODEL 1         8B903020
*                                                 8B903030
021B 0 C400 0609   LD  L  TURA1      GET TURNAROUND 8B903040
021D 0 D400 0679   STO L  MT1X0      SET          8B903050
021F 0 C400 0600   LD  L  MOO1S      GET TAPE SPEED 8B903060
0221 0 D400 060F   STO L  INPSE      SET          8B903070
0223 0 C400 060B   LD  L  GPHLM      GET GR LN MOO 8B903080
0225 0 1001        SLA    1          MUL BY 2     8B903090
0226 0 8400 060B   A   L  GPHLM      MUL BY 1     8B903100
0228 0 D400 060B   STO L  GPHLM      SET MOOIFIER 8B903110
022A 0 6304        LDX    3 4                     8B903120
022B 0 10A0        BEGAG SLT  32     CLEAR A ANO Q 8B903130
022C 0 C700 066C   LD  L3 CON-1      GET A CONSTANT 8B903140
022E 0 A400 0084   M   L  MT7X0      MUL BY 10    8B903150
0230 0 1800        RTE    16         SET IN ACCUM 8B903160
0231 0 8400 0679   A   L  MT1X0      ADD TURNAROUNO 8B903170
0233 0 D700 066C   STO L3 CON-1      SET          8B903180
0235 0 73FF        MDX    3 -1       OECR IX      8B903190
0236 0 70F4        MDX    BEGAG      LOOP         8B903200
0237 0 C400 060A   LD  L  MO1LM      GET READ LIMIT 8B903210
0239 0 D400 066E   STO L  CON&1      SET          8B903220
023B 0 6308        LDX    3 8                     8B903230
023C 0 C700 0670   BEGAR LD  L3 CON1-1  GET A CONSTANT 8B903240
023E 0 1001        SLA    1          MUL BY 2     8B903250
023F 0 8700 0670   A   L3 CON1-1     MUL BY 1     8B903260
0241 0 0700 0670   STO L3 CON1-1     SET          8B903270
0243 0 73FF        MDX    3 -1       OECR IX      8B903280
0244 0 70F7        MDX    BEGAR      LOOP         8B903290
0245 0 C400 02EC   LD  L  EDIT&8     GET MEM SPEEO 8B903300
0247 0 4C18 0262   BSC L  FWRO,+-    BR IF 2.00 US $ 8B903310
0249 0 4C10 0205   BSC L  BEGAK,-    BR IF 4.00 US $ 8B903320
024B 0 C010        LD     ARIA2                   $ 8B903330
024C 0 0400 0675   STO L  MT5XA      SETUP        $ 8B903340
024E 0 C00E        LD     ARIA2+1    FOR          $ 8B903350
024F 0 0400 0676   STO L  MT5XA+1    2.25 US      $ 8B903360
0251 0 C00C        LD     ARIA2+2    MEMORY       $ 8B903370
0252 0 0400 0677   STO L  MT5XA+2    SPEED        $ 8B903380
0254 0 C00A        LD     ARIA2+3    AND          $ 8B903390
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0255 0 0400 0678   STO L  MT5XA+3    MOD 1        $ 8B903400
0257 0 C008        LD     ARIA2+4    TAPE         $ 8B903410
0258 0 D400 06DB   STO L  GPHLM      CONSTANTS    $ 8B903420
025A 0 4C00 0205   BSC L  BEGAK      BR TO EXIT SETUP $ 8B903430
025C 0 029C        ARIA2 DC  /029C                $ 8B903440
025D 0 0310        DC     /0310      MOD 1        $ 8B903450
025E 0 0294        DC     /0294      TAPE         $ 8B903460
025F 0 0308        DC     /0308      CONSTANTS    $ 8B903470
0260 0 0008        DC     /0008      2.25 US      $ 8B903480
0261 0 FFFF        DC     /FFFF                   $ 8B903490
0262 0 7402 0677   FWRO MDX L MT5XA+2,2 ADJ GRPH LIMITS $ 8B903500
0264 0 74FF 0678        MDX L MT5XA63,-1 *          8B903510
0266 0 7401 06D8        MDX L GPHLM,1 *             8B903520
0268 0 706C             MDX   BEGAK  BR TO EXIT     8B903530
*                                                 8B903535
0269 0 C400 02EC   BEGAM LD  L EOIT+8  GET P/C SPEED XTNT $ 8B903540
026B 0 4828        BSC    Z+         SKIP IF NEG.  $ 8B903550
026C 0 7003        MDX    *+3        8R IF NOT 2.25 US $ 8B903560
026D 0 C400 06DB   LD  L  GPHLM                   $ 8B903570
026F 0 7017        B      FWO1       SETUP        $ 8B903580
0270 0 C010        LD     ARIA3      MOD 3        $ 8B903590
0271 0 D400 0675   STO L  MT5XA      TAPE         $ 8B903600
0273 0 C00E        LD     ARIA3+1    CONSTANTS    $ 8B903610
0274 0 D400 0676   STO L  MT5XA+1    FOR          $ 8B903620
0276 0 C00C        LD     ARIA3+2    2.25 US P/C  $ 8B903630
0277 0 D400 0677   STO L  MT5XA+2                 $ 8B903640
0279 0 C00A        LD     ARIA3+3                 $ 8B903650
027A 0 D400 0678   STO L  MT5XA+3                 $ 8B903660
027C 0 C008        LD     ARIA3+4                 $ 8B903670
027D 0 D400 060B   STO L  GPHLM                   $ 8B903680
027F 0 4C00 02D5   BSC L  BEGAK      BR TO EXIT   $ 8B903690
0281 0 0000        ARIA3 DC  /0000                $ 8B903700
0282 0 00FB        DC     /00FB      MOD 3        $ 8B903710
0283 0 00CE        DC     /00CE      TAPE         $ 8B903720
0284 0 00F9        DC     /00F9      CONSTANTS    $ 8B903730
0285 0 0002        DC     /0002                   $ 8B903740
0286 0 FFFF        DC     /FFFF                   $ 8B903750
*                                                 $ 8B903755
0287 0 1801        FWO1 SRA  1        CK FOR 1    $ 8B903760
0288 0 4C20 02D5   BSC L  8EGAK,Z    BR # NOT 1     8B903770
028A 0 7401 06DB   MDX L  GPHLM,1    SET TO 2       8B903780
028C 0 7407 0676   MDX L  MT5XA&1,7  AOJ GPH LMTS   8B903790
028E 0 7406 0678   MDX L  MT5XA&3,6                 8B903800
0290 0 7044        MDX    8EGAK                     8B903810
*                                                 8B903820
*                  CHECK FOR MOOEL 2              8B903830
*                                                 8B903840
0291 0 C500 02EA   BEGAI LD  L1 EDIT&6  GET OR MOOEL 8B903850
0293 0 F400 0610   EOR L  COOEH&2                  8B903860
0295 0 4820        BSC    Z          ARE THEY MOOEL 2 8B903870
0296 0 703E        MDX    BEGAK      NO            8B903880
*                                                 8B903890
*                  SET PROGRAM TO MODEL 2         8B903900
*                                                 8B903910
0297 0 C400 0608   LD  L  TURA2      GET TURNAROUNO 8B903920
0299 0 D400 0679   STO L  MT1X0      SET          8B903930
029B 0 C400 060E   LD  L  MOD2S      GET TAPE SPEEO 8B903940
029D 0 D400 060F   STO L  INPSE      SET          8B903950
029F 0 7401 06DB   MDX L  GPHLM,1                 8B903960
02A1 0 6304        LDX    3 4                     8B903970
02A2 0 10A0        BEGAJ SLT  32     CLEAR A ANO Q 8B903980
02A3 0 C700 066C   LD  L3 CON-1      GET A CONSTANT 8B903990
02A5 0 1001        SLA    1          MUL BY 2     8B904000
02A6 0 0700 066C   STO L3 CON-1      SET          8B904010
02A8 0 73FF        MDX    3 -1       OECR IX      8B904020
02A9 0 70F8        MDX    BEGAJ      LOOP         8B904030
02AA 0 6308        LDX    3 8                     8B904040
02AB 0 C700 0670   BEGAS LD  L3 CON1-1  GET A CONSTANT 8B904050
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02AD 0 1801            SRA    1           MUL BY .5            8B904060
02AE 0 8700 0670       A      L3 CON1-1   MUL BY 1            8B904070
02B0 0 D700 0670       STD    L3 CON1-1   SET                8B904080
02B2 0 73FF            MDX    3 -1        OECR IX             8B904090
02B3 0 70F7            MDX    BEGAS       LOOP                8B904100
02B4 0 7401 0677       MDX  L MT5XA&2,1   ADJ GRPH LMT        8B904110
02B6 0 C035            LD     EOIT&8      GET MEM SPEEO       8B904120
02B7 0 4C18 0201       BSC  L FWD2,+-     BR IF 2.00 US P/C  $ 8B904130
02B9 0 4C10 02D5       BSC  L BEGAK,-     BR IF 4.00 US P/C  $ 8B904140
02BB 0 C00F            LD     ARIA4                          $ 8B904150
02BC 0 0400 0675       STO  L MT5XA       SETUP              $ 8B904160
02BE 0 C000            LD     ARIA4+1     FOR                $ 8B904170
02BF 0 0400 0676       STO  L MT5XA+1     2.25 US P/C        $ 8B904180
02C1 0 C00B            LD     ARIA4+2     AND                $ 8B904190
02C2 0 0400 0677       STO  L MT5XA+2     MOO 2              $ 8B904200
02C4 0 C009            LO     ARIA4+3     TAPE               $ 8B904210
02C5 0 0400 0678       STO  L MT5XA+3     CONSTANTS          $ 8B904220
02C7 0 C007            LO     ARIA4+4                        $ 8B904230
02C8 0 0400 0679       STO  L MT5XA+4                        $ 8B904240
02CA 0 700A            MOX    BEGAK       BR TO EXIT         $ 8B904250
02CB 0 0148            ARIA4 DC   /0148                      $ 8B904260
02CC 0 0194            OC     /0194       MOD 2              $ 8B904270
02CD 0 0144            OC     /0144       TAPE               $ 8B904280
02CE 0 0190            OC     /0190       CONSTANTS          $ 8B904290
02CF 0 0004            OC     /0004                          $ 8B904300
0200 0 FFFF            OC     /FFFF                          $ 8B904310
                                                             $ 8B904315
                       *                                     $ 8B904320
0201 0 74FF 0678       FW02   MOX  L MT5XA+3,-1 ADJ GPH CNST $ 8B904320
02D3 0 7401 060B       MDX  L GPHLM,1     *                  8B904330
0205 0 4C80 014F       BEGAK BSC  I BEGIN   EXIT          SX 8B904340
                       *                                     8B904350
                       *           GO TO PRDG INITILIZATION  8B904360
                       *                                     8B904370
                       *                                     8B904380
                       *                                     8B904390
                       *           CONSTANTS                 8B904400
                       *                                     8B904410
0208    0000           BSS  E 0                              8B904420
02D8 0 4C00 0130       BEGX4 BSC  L BEGAP   RESTART CONSTANT 8B904430
020A 0 02E1            BEGX5 OC   SWO     IOCC-READ BIT SWS  8B904440
020B 0 0240            DC   /0240                            8B904450
020C 0 02E2            BEGX7 OC   SW1     READ PRDG SWS IDCC 8B904460
0200 0 0260            OC   /0260                            8B904470
                       *                                     8B904480
             *XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX   8B904490
             *XXXXXXXXXXXXXXXX PROGRAM STATUS TABLE XXXXXX    8B904500
             *XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX   8B904510
                       *                                     8B904520
020E 0 B900            PIO  OC   /B900                       8B904530
020F 0 0000            R1O  OC   0       ROUTINE NUMBER      8B904540
02E0 0 0000            RAO  OC   0       ROUTINE AOORESS     8B904550
02E1 0 0000            SWO  OC   0       SWITCH ENTRY 1      8B904560
02E2 0 0000            SW1  OC   0       SWITCH ENTRY 2      8B904570
02E3 0 FFFF            TERM OC   /FFFF   TERMINATOR          8B904580
02E4 0 7000            EOIT OC   /7000   TAPE AREA COOE      8B904590
02E5 0 3000            OC   /3000   1443 AREA COOE           8B904600
02E6 0 0000            OC   0       ILSW BIT -TAPES          8B904610
02E7 0 0000            OC   0       INTR ADRS-TAPES          8B904620
02E8 0 0000            OC   0       NUMBER TRACKS OR 0       8B904630
02E9 0 0000            OC   0       NUMBER TRACKS DR 1       8B904640
02EA 0 0000            DC   0       ORIVE 0 MOOEL            8B904650
02EB 0 0000            OC   0       ORIVE 1 MOOEL            8B904660
02EC 0 0000            OC   0       MEMORY SPEED             8B904670
                       *                                     8B904680
                       *           OSW TABLE                 8B904690
                       *                                     8B904700
02E0 0 0000            ACTI OC   0       AREA COOE TAPES      8B904710
02EE 0 0313            OC   INTR3&1  INTR RTN TAPES          8B904720
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                       *                                     8B904730
             *XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX   8B904740
             *XXXXXXXXXXXXXXXXX INITIALIZATION RDUTINE XXXX   8B904750
             *XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX   8B904760
                       *                                     8B904770
02EF 0 630B            MONT  LDX  3 11       CLEAR DST TABLE  8B904780
02F0 0 1010            SLA    16                             8B904790
02F1 0 D700 06DF       MONT1 STO  L3 OST-1                   8B904800
02F3 0 73FF            MDX    3 -1                           8B904810
02F4 0 70FC            MDX    MONT1                          8B904820
                       *                                     8B904830
                       *           SET NECESSARY VALUES      8B904840
                       *                                     8B904850
                       *                                     8B904860
02F5 0 1010            SLA    16                             8B904870
02F6 0 D0E8            STO    RIO       CLEAR RTN NO         8B904880
02F7 0 0400 093B       STO  L PGSW      CLEAR PROG SW        8B904880
02F9 0 C0EA            LO     EDIT      GET TAPE AREA CODE   8B904890
02FA 0 D0F2            STD    ACTI      SET                  8B904900
02FB 0 0400 06E8       STO  L OST&8                          8B904910
02FD 0 0804            X1D    UNMK3     UNMASK ALL LEVELS    8B904920
02FE 0 0805            XID    UNMK4                          8B904930
02FF 0 4006            BSI    RDSWS     REAO SWS             8B904940
0300 0 4C00 06F0       BSC  L MONT4     BRANCH               8B904950
0302   0000            BSS  E 0                              8B904960
0302 0 0000            UNMK3 OC   0       IOCC-UNMASK LOWER  8B904970
0303 0 0480            DC   /0480                            8B904980
0304 0 0000            UNMK4 DC   0       IDCC-UNMASK UPPER  8B904990
0305 0 0481            DC   /0481                            8B905000
                       *                                     8B905010
0306 0 0000            RDSWS DC   0                          8B905020
0307 0 08D2            X1O    BEGX5     READ DATA SWS        8B905030
0308 0 08D3            X1O    BEGX7     READ PROG SWS        8B905040
0309 0 C0D8            LD     SW1       AOJ PROG SWS         8B905050
030A 0 1005            SLA    5                              8B905060
030B 0 1800            SRA    13                             8B905070
030C 0 D0D5            STO    SW1       *                    8B905080
030D 0 4C80 0306       BSC  I ROSWS     EXIT                 8B905090
             *XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX   8B905100
             *XXXXXXXXXXXXXXXXX INTERRUPT ROUTINE XXXXXXXXX   8B905110
             *XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX   8B905120
                       *                                     8B905130
030F 0 6600 0000       TAX1  LOX  L2 0       RESTORE IX      8B905140
0311 0 C856            LOO    TAAQ      RESTORE A ANO Q      8B905150
0312 0 4C40 0000       INTR3 BOSC L  0     ENTRY ANO EXIT    8B905160
0314 0 6AFB            STX    2 TAX1&1   SAVE IX 2           8B905170
0315 0 0852            STO    TAAQ      SAVE A ANO Q         8B905180
0316 0 084F            XIO    ILSW      SENSE ILSW BIT       8B905190
0317 0 4418 0371       BSI  L TERR,&-   BRANCH ON BLANK ILSW 8B905200
0319 0 E0CC            ANO    EOIT&2    CK IF TAPE           8B905210
031A 0 4C20 031E       BSC  L INTRR,Z   BRANCH # TAPE        8B905220
031C 0 4015            BSI    SVINT     BRANCH-NOT TAPE      8B905230
0310 0 70F1            MOX    TAX1      GO EXIT              8B905240
031E 0 C04B            INTRR LO   OSW       BUILO SENSE OSW  8B905250
031F 0 F0C0            EOR    ACTI      *                    8B905260
0320 0 004A            STO    OSW&1     *                    8B905270
0321 0 0848            X1O    OSW       SENSE-NO RESET       8B905280
0322 0 C048            LO     OSW&1     BUILO RESET SENSE    8B905290
0323 0 F04A            EOR    ONE       *                    8B905300
0324 0 0046            STO    OSW&1     *                    8B905310
0325 0 0844            X1O    OSW       SENSE-RESET          8B905320
0326 0 0045            STO    TAOSW     SAVE SENSE WO        8B905330
0327 0 6600 06E0       LOX  L2 DST      SET IX               8B905340
0329 0 C042            LO     TAOSW     GET SENSE WO         8B905350
032A 0 E042            ANO    TAOWC     CK FOR LEGAL         8B905360
032B 0 4808            BSC    &         SKIP # LEGAL         8B905370
032C 0 4042            BSI    ERRI      ILLEGAL OSW          8B905380
0320 0 C03E            LO     TAOSW     GET SENSE WO         8B905390
032E 0 0207            STO    2 7       SET IN OST           8B905400
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`ATE   01JUL66   01NOV66   15MAY67   01SEP67   01OCT67   14NOV69   30JAN70   PROG IO   08B9-2
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032F O 70DF          MOX    TAX1      EXIT               88905410
0330   0000          BSS E  O                            88905420
                  *                                       88905430
0330 O 0701   OSWSP DC   /0701   SENSE-RESET IDCC        88905440
0331 O 0000         DC   O                               88905450
                  *                                       88905460
                  *                                       88905470
              *XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX   88905480
              *XXXXXXXXXXXXXXX ROUTINE TO SERVICE   XXXXX  88905490
              *XXXXXXXXXXXXXXX NON-PROGRAM GENERATED XXXXX 88905500
              *XXXXXXXXXXXXXXX INTERRUPTS            XXXXX 88905510
              *XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX   88905520
                  *                                       88905530
0332 O 0000   SVINT OC   O                          IE    88905540
0333 O 0030         STD   SVID    SAVE ACCUMULATOR        88905550
0334 O COAE         LO    TERM    SET ILLEGAL INTR        88905560
0335 O D400 06E7    STO L DST&7                           88905570
0337 O 082E         XIO   ILSW    RESET ILSW              88905580
0338 O 7402 0362    MOX L SV7,2   SET PASS SWITCH         88905590
033A O 1010         SLA   16                              88905600
033B O 0023         STO   SV4     CLEAR AREA CODE CNTR    88905610
033C O C020         LD    SV2                             88905620
033D O D023         STD   SV6     SET IOCC IN USE SW      88905630
033E O C01D   SVINO LD    SV1                             88905640
033F O D020         STO   SV5     SET MDOIFIER COUNTER    88905650
0340 O C01E   SVIN1 LO    SV4     *                       88905660
0341 O 100B         SLA   11      *                       88905670
0342 O E810         OR    SV5     *BUILO IOCC             88905680
0343 O E810         OR    SV6     *                       88905690
0344 O 0020         STO   SVID&1  *                       88905700
0345 O 081E         XID   SVIO    SENSE DSW ANO RESET     88905710
0346 O 74FF 0360    MDX L SV5,-1                          88905720
0348 O 70F7         MOX   SVIN1   BRANCH IF NOT ALL MO    88905730
0349 O 7401 035F    MOX L SV4,1   INCREMENT AREA CODE     88905740
034B O C013         LO    SV4                             88905750
034C O 900E         S     SVO     CHECK IF ALL AC USED    88905760
034D O 4808         BSC   &       SKIP IF ALL AC USED     88905770
034E O 70EF         MOX   SVINO   GD SENSE WITH NXT AC    88905780
034F O 74FF 0362    MOX L SV7,-1  SKIP IF SECOND PASS     88905790
0351 O 7001         MDX   *&1                             88905800
0352 O 7005         MOX   SVEXT-1                         88905810
0353 O COOA         LD    SV3                             88905820
0354 O 000C         STO   SV6     SET IDCC FOR PI         88905830
0355 O 1010         SLA   16                              88905840
0356 O 0008         STD   SV4     SET AC FOR NEXT         88905850
0357 O 70E6         MOX   SVINO   *PASS                   88905860
0358 O COOB         LO    SVIO    RESTORE ACCUMULATOR     88905870
0359 O 4CCO 0332  SVEXT BOSC I SVINT  EXIT          IX    88905880
                  *                                       88905890
                  *        **  CONSTANTS  **              88905900
                  *                                       88905910
035B O 001F   SVO   DC   /001F   NUMBER OF AREA CODES     88905920
035C O 00FF   SV1   OC   /00FF   NUMBER OF MODIFIERS      88905930
035D O 0701   SV2   OC   /0701   SENSE/RESET DSW          88905940
035E O 0700   SV3   OC   /0700   SENSE/RESET PISW         88905950
035F O 0000   SV4   OC   O       AREA CODE INDICATOR      88905960
0360 O 0000   SV5   DC   O       MDDIFIER INOICATOR       88905970
0361 O 0000   SV6   OC   O       IDCC IN USE              88905980
0362 O 0000   SV7   DC   O       PASS SWITCH              88905990
0364   0000         BSS E  O                              88906000
0364 O 0000   SVIO  DC   O       SENSE OSW IOCC           88906010
0365 O 0000         OC   O                                88906020
                  *                                       88906030
                  *        CONSTANTS                      88906040
                  *                                       88906050
0366   0000         BSS E  O                              88906060
0366 O 0000   ILSW  OC   O       SENSE ILSW IOCC          88906070
0367 O 0300         DC   /0300                            88906080
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0368 O 0000   TAAQ  DC   O       A ANO Q TEM STOR         88906090
0369 O 0000         DC   O                                88906100
036A O 0700   DSW   DC   /0700   OSW IOCC                 88906110
036B O 0000         DC   O                                88906120
036C O 0000   TAOSW DC   O       TAPE DSW STDRAGE         88906130
036D O 3040   TADWC OC   /3040   CK TAPE OSW FOR DK       88906140
036E O 0001   DNE   OC   1       CONSTANT                 88906150
                  *                                       88906160
                  *             ERROR HANGS               88906170
                  *                                       88906180
036F O 0000   ERRI  DC   O                                88906190
0370 O 3009   WAIT9 WAIT 9       ILLEGAL INTRPT           88906200
                  *                                       88906210
0371 O 0000   TERR  DC   O                                88906220
0372 O 300A   WAITA DC   /300A   BLANK ILSW               88906230
                  *                                       88906240
              *XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX   88906250
              *XXXXXXXXXXXXXXX COMMON DCC RDUTINE XXXXXXX  88906260
              *XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX   88906270
                  *                                       88906280
0373 O 0000   OCC   OC   O                          *     88906290
0374 O 6A10         STX  2 DCC2&1  SAVE IX 2              88906300
0375 O 6780 0373    LOX  I3 OCC    IX3 # RETURN           88906310
                  *                                       88906320
0377 O C300         LO   3 O       GET AORS DF STRING     88906330
0378 O DOFA         STD   OCC                             88906340
                  *                                       88906350
0379 O 6680 0373    LOX  I2 OCC    IX2 # ADRS STRING      88906360
                  *                                       88906370
037B O C680 0000    LD   I2 O      SET AREA COOE          88906380
037D O EE80 0001    OR   I2 1      SET FUNC               88906390
037F O EE80 0002    OR   I2 2      SET MDOIFIER           88906400
                  *                                       88906410
0381 O 1890         SRT   16       PUT IN Q               88906420
0382 O C203         LD   2 3       GET I/O AORS           88906430
                  *                                       88906440
0383 O 0806         STO   OCC3     SET IOCC WD            88906450
0384 O 6600 0000  OCC2 LOX L2 0    RESTORE IX 2           88906460
                  *                                       88906470
0386 O 0803         XIO   OCC3     OD COMMANO             88906480
                  *                                       88906490
0387 O 4F00 0001    BSC L3 1       RETURN           SX    88906500
038A   0002    OCC3 BSS E  2                              88906510
                  *                                       88906520
              *XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX   88906530
              *XXXXXXXXXXXXXXX COMMON DELAY ROUTINE XXXXXX 88906540
              *XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX   88906550
                  *                                       88906560
038C O 0000   OELAY DC  O                          SE     88906570
038D O 6780 038C    LDX  I3 OELAY   IX3 # RETURN          88906580
038F O CF80 0000    LDD  I3 O       GET COUNT             88906590
0391 O 980C   JOLY2 SO    MONE     SU8 1                  88906600
0392 O 080D         STD   MST      SAVE                   88906610
0393 O 4C20 0398    BSC L JDLY3,Z  CK FOR ZERD            88906620
0395 O 18D0         RTE   16                              88906630
0396 O 4C18 039A    BSC L JDLY4,&- CK FOR ZERO            88906640
0398 O C807   JOLY3 LDD   MST      GET COUNT              88906650
0399 O 70F7         MDX   JOLY2                           88906660
039A O 7401 038C JOLY4 MOX L OELAY,1  &1 TO RETURN        88906670
039C O 4C80 038C    BSC I OELAY    RETURN           SX    88906680
039E   0000         8SS E  O                              88906690
039E O 0000   MONE  DC   O                                88906700
039F O 0001         DC   1                                88906710
03A0 O 0000   MST   OC   O                                88906720
03A1 O 0000         DC   O                                88906730
                  *                                       88906740
              *XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX   88906750
              *XXXXXXXXXXXXXXX COMMON SENSE OEVICE RTN XXX 88906760
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                        *XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX    8B906770
                        *                                           8B906780
03A2 0 0000     DIND    DC      0                              SE   8B906790
03A3 0 6780 03A2        LDX     I3 DIND      IX 3 # RETURN          8B906800
03A5 0 C780 0000        LD      I3 0         LOAD AREA CDDE         8B906810
03A7 0 F006             EOR     FNC          SET FUNCT              8B906820
03A8 0 F780 0001        EOR     I3 1         SET MOD                8B906830
03AA 0 D006             STD     IOCC1&1      SAVE                   8B906840
03AB 0 0804             XIO     IOCC1        SENSE                  8B906850
03AC 0 4F00 0003        8SC     L3 3         RETURN              SX  8B906860
03AE 0 0700     FNC     DC      /0700                               8B906870
03B0   0000             BSS     E 0                                 8B906880
03B0 0 0000     IOCC1   DC      0                                   8B906890
03B1 0 0000             DC      0                                   8B906900
                        *                                           8B906910
                        *XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX    8B906920
                        *XXXXXXXXXXXXXXX COMMON HALT ROUTINE XXXXXXX 8B906930
                        *XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX    8B906940
                        *                                           8B906950
03B2 0 0000     HALT    DC      0                              SE   8B906960
03B3 0 0C00 043E        XIO     L MK15       MASK ALL LEVELS        8B906970
03B5 0 0C0D 044D        XIO     L MK27       *                      8B906980
03B7 0 3002     WAIT2   WAIT    2            COMMON WAIT            8B906990
03B8 0 0C00 0302        XID     L UNMK3      UNMASK                 8B907000
03BA 0 0C00 0304        XIO     L UNMK4      UNMASK                 8B907010
03BC 0 4C80 03B2        BSC     I HALT       RETURN              SX  8B907020
03BE 0 0000     WC      OC      0            WD CT STDRAGE          8B907030
                        *                                           8B907040
                        *XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX    8B907050
                        *XXXXXXXXXXXXXXX ROUTINE TD CONTRDL   XXXX   8B907060
                        *XXXXXXXXXXXXXXX CONVERSIDN AND LDGGING XXXX 8B907070
                        *XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX    8B907080
                        *                                           8B907090
03BF 0 0D00     LOGC    DC      0                              SE   8B907100
03C0 0 6D00 D564        STX     L1 LOGC7&1   SAVE IXING             8B907110
03C2 0 6E00 0566        STX     L2 LDGC8&1   *                      8B907120
03C4 0 6F00 0568        STX     L3 LOGC9&1   *                      8B907130
03C6 0 6500 08F7        LDX     L1 MDD0      IX 1 # ADRS DF MSG     8B907140
03C8 0 6600 0096        LOX     L2 PRA       IX 2 # ADR OF MSG      8B907150
03CA 0 631F             LOX     3 31         IX 3 # LNGTH/OUTPUT    8B907160
03CB 0 1010             SLA     16           SET ACCUM # 8LANK      8B907170
03CC 0 0700 0091 LOGIC  STO     L3 PRA4-1    SET I/O AREA # BLANK   8B907180
03CE 0 73FF             MOX     3 -1                                8B907190
03CF 0 70FC             MOX     LOGIC                               8B907200
03D0 0 6700 08F7        LOX     L3 MDD0      IX 3 # ADRS OF MSG     8B907210
03D2 0 C100             LO      1 0          GET LINE NO/WD CT      8B907220
03D3 0 1808             SRA     8            SAVE LINE NUMBER       8B907230
03D4 0 4C18 0499        BSC     L LOGD0,&-   BRANCH # LINE ZERO     8B907240
03D6 0 7306     LOG2C   MOX     3 6          SET IX3 # 2NO MDO      8B907250
03D7 0 7210             MOX     2 16         SET IX2 # 2ND MDD      8B907260
03D8 0 C100             LO      1 0          GET WO CT/LINE NO      8B907270
03D9 0 1008             SLA     8                                   8B907280
03DA 0 1808             SRA     8            SAVE WO CT             8B907290
03DB 0 00E2             STO     WC                                  8B907300
03DC 0 74FC 03BE        MDX     L WC,-4      OECR WO CT             8B907310
03DE 0 7001             MOX     LDGV1        NOT OONE               8B907320
03DF 0 7039             MDX     LDG6C        CONV COMPLETE          8B907330
03E0 0 1010     LOGV1   SLA     16           CLEAR ODD-EVEN SW      8B907340
03E1 0 0400 0462        STO     L SW         *                      8B907350
03E3 0 C400 020F        LO      L RID        GET RTN ID             8B907360
03E5 0 F070             EOR     K007         CK FOR RTN 7           8B907370
03E6 0 4820             BSC     Z            SKIP = RTN 7           8B907380
03E7 0 7016             MDX     LOG3C        BRANCH                 8B907390
03E8 0 6700 0930        LOX     L3 MTTY0     SET IX 3               8B907400
03EA 0 C300     LOGV2   LO      3 0          GET WD                 8B907410
03EB 0 0400 05E5        STO     L WOCON      SET                    8B907420
03ED 0 4400 05A6        BSI     L HEOEC      CONVERT TO OEC         8B907430
03EF 0 C400 050B        LO      L CODE&1     GET CONVERTED WD       8B907440
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03F1 0 D200             STO     2 0          SET IN MSG             8B907450
03F2 0 7201             MDX     2 1          INCR IX                8B907460
03F3 0 7301             MDX     3 1          *                      8B907470
03F4 0 7401 0462        MDX     L SW,1       INCR SWITCH            8B907480
03F6 0 C06B             LD      SW           GET SWITCH             8B907490
03F7 0 4804             BSC     E            SKIP IF EVEN           8B907500
03F8 0 70F1             MDX     LDGV2        LOOP                   8B907510
03F9 0 7201             MDX     2 1          INCR IX                8B907520
03FA 0 74FF 03BE        MDX     L WC,-1      CK FOR DUNE            8B907530
03FC 0 70ED             MDX     LOGV2        LOOP                   8B907540
03FD 0 701B             MDX     LOG6C        PRINT                  8B907550
03FE 0 C101     LDG3C   LD      1 1          GET HEX/OEC SW         8B907560
03FF 0 4C18 0411        BSC     L LOG5C,&-   BRANCH # HEX           8B907570
0401 0 C300             LD      3 0          GET WD TO CONV         8B907580
0402 0 0400 05E5        STO     L WDCDN      SET IN CONV RTN        8B907590
0404 0 4400 05A6        BSI     L HEDEC      GD CONV TD DEC         8B907600
0406 0 CC00 05DA        LDD     L CODE       GET PACKED WD          8B907610
0408 0 D200     LOG4C   STD     2 0          SET IN MSG             8B907620
0409 0 18D0             RTE     16                                  8B907630
040A 0 0201             STO     2 1                                 8B907640
040B 0 7203             MDX     2 3                                 8B907650
040C 0 7301             MOX     3 1          INCR IX 3              8B907660
040D 0 74FF 03BE        MDX     L WC,-1      CHECK FOR DONE         8B907670
040F 0 70EE             MDX     LDG3C                               8B907680
0410 0 7008             MDX     LDG6C                               8B907690
0411 0 C300     LOG5C   LO      3 0          GET WD TO CDNVERT      8B907700
0412 0 0400 0606        STD     L HEXWD      STD IN HEX CDNV RTN    8B907710
0414 0 4400 05E6        8SI     L HEXCV      GO CONVERT TO HEX   SRC 8B907720
0416 0 CC00 060C        LDD     L HEXCD      GET CDNVERTED WD       8B907730
0418 0 70EF             MDX     LOG4C        GD CK FOR DONE         8B907740
0419 0 C400 02E3 LOG6C  LD      L TERM       GET A TERM             8B907750
041B 0 D200             STO     2 0          SET IN I/O AREA        8B9D776D
041C 0 C400 02DF        LD      L RID        GET RTN NO             8B907770
041E 0 9D45             S       K006         SUB 6                  8B907780
041F 0 4820             BSC     Z            SKIP IF RTN 6          8B9D7790
0420 0 7D15             MDX     HERE                                8B90780D
0421 0 C400 0D2E        LD      L LOW        GET LDW CREEP SW       8B90781D
0423 0 4810             BSC     -            SKIP IF NEG            8B907820
0424 0 7003             MDX     HERE1                               8B9D7830
0425 0 C03F             LO      K0020        GET NEG SIGN           8B907840
0426 0 0400 0DA5        STO     L PRA4&19    SET IN MSG             8B907850
0428 0 C400 0030 HERE1  LO      L AVG        GET AVG SW             8B907860
042A 0 4810             BSC     -            SKIP IF NEG            8B9D7870
042B 0 7003             MOX     HERE2                               8B907880
042C 0 C038             LO      K0020        GET NEG SIGN           8B90789D
042D 0 0400 0DA8        STO     L PRA4&22    SET IN MSG             8B907900
042F 0 C400 0D2F HERE2  LO      L HI         GET HI SW              8B907910
0431 0 4810             BSC     -            SKIP IF NEG            8B907920
0432 0 7003             MOX     HERE                                8B907930
0433 0 C031             LO      K0020        GET NEG SIGN           8B907940
0434 0 D400 00AB        STO     L PRA4&25    SET IN MSG             8B907950
                *                                                   8B907960
0436 0 C400 02E1 HERE   LO      L SWO        GET SWS                8B907970
0438 0 1806             SRA     6                                  8B907980
0439 0 4C00 0466        BSC     L LOGAC,E    BRANCH # USE PRINTER   8B907990
043B 0 4C00 052A        BSC     L LOGBC      USE TYPEWRITER         8B908000
                *                                                   8B9D801D
043E   0000             BSS     E 0                                 8B908020
043E 0 FFFF     MK15    DC      /FFFF        MASK ALL LVLS IOCCS    8B908030
043F 0 0480             OC      /0480                               8B908040
0440 0 FFFF     MK27    OC      /FFFF                               8B908050
0441 0 0481             DC      /0481                               8B908060
0442 0 0700     SNSPR   OC      /0700                               8B908070
0443 0 0700             DC      /0700                               8B908080
0444 0 6500 0000 LOG7C  LDX     L1 0         RESTORE IX 1           8B908090
0446 0 6600 0000 LOG8C  LOX     L2 0         RESTORE IX 2           8B908100
0448 0 6700 0000 LOG9C  LOX     L3 0         RESTORE IX 3           8B908110
044A 0 4C80 03BF        BSC     I LOGC       EXIT                SX  8B908120
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044C 0 0000      PCCO  DC       0                            SE      8B908130
044D 0 69F7            STX   1  LOG7C&1   SAVE IX 1                   8B908140
044E 0 6AF8            STX   2  LOG8C&1   SAVE IX 2                   8B908150
044F 0 6BF9            STX   3  LOG9C&1   SAVE IX 3                   8B908160
0450 0 C010            LD       PCCX1     GET WD CT                   8B908170
0451 0 D400 08F7       STD   L  MDD0      SAVE                        8B908180
0453 0 C0F8            LD       PCCO      GET RETURN                  8B908190
0454 0 D400 03BF       STO   L  LOGC      SAVE                        8B908200
0456 0 C400 02E3       LD    L  TERM      GET TERMINATOR              8B908210
0458 0 D400 0DAE       STO   L  PRA4&28   SET IN MSG                  8B908220
045A 0 C400 02E1       LD    L  SW0       GET SW FNC 0                8B908230
045C 0 1806            SRA      6                                     8B908240
045D 0 4C04 0466       BSC   L  LOGAC,E   BRANCH # USE PRINTER        8B908250
045F 0 4C00 052A       BSC   L  LOGBC     USE TYPEWRITER              8B908260
0461 0 0009      PCCX1 DC       9         PCCO WD CT                  8B908270
0462 0 0000      SW    DC       0         ODD-EVEN SW                 8B908280
0463 0 0007      K007  DC       /0007     CONSTANT  7                 8B908290
0464 0 0006      K006  DC       6         CONSTANT                    8B908300
0465 0 0020      K0020 DC       /0020     *                          8B908310
                                                                     8B908320
                 *XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX           8B908330
                 *XXXXXXXXXXXXXXXX PRINTER OUTPUT RDUTINE XXXX        8B908340
                 *XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX           8B908350
                 *                                                    8B908360
0466 0 6818      LOGAC STX   3  LOGAB&1   SAVE IX 3                   8B908370
0467 0 C400 08F7       LD    L  M0D0      GET WD CT/ LINE NO          8B908380
0469 0 1008            SLA      8         SAVE WD CT                  8B908390
046A 0 1808            SRA      8                                     8B908400
046B 0 D001            STO      LOGA0&1                               8B908410
046C 0 6700 0000 LOGAD LOX   L3 0         IX 3 # WD CT                8B908420
046E 0 C700 048F       LD    L3 PRWC-2    GET FINAL WD CT             8B908430
0470 0 D400 0092       STD   L  PRA4      SAVE                        8B908440
0472 0 C0CF            LD       SNSPR     GET SENSE IOCC              8B908450
0473 0 F400 02E5       EOR   L  EDIT&1    SET AREA CODE               8B908460
0475 0 00CD            STO      SNSPR&1   SAVE                        8B908470
0476 0 08C7            XIO      MK15      MASK ALL LVLS               8B908480
0477 0 08C8            XIO      MK27      *                           8B908490
0478 0 08C9            XIO      SNSPR     SENSE PRINTER               8B908500
0479 0 4804            BSC      E         IS PRINTER READY            8B908510
047A 0 3003      WAIT3 WAIT     3         PRINTER NOT READY           8B908520
                 *                                                    8B908530
                 *                                                    8B908540
                 ***************************************+****-**      8B908550
047B 0 4400 0373       BSI   L  DCC       GD LOG             *        8B908560
047D 0 05A0            DC       LOGX3     ADRS OF STRING     *        8B908570
                 *************************+*********************      8B908580
047E 0 6700 0000 LOGAB LOX   L3 0         RESTORE IX 3                8B908590
0480 0 08C1      LOGAE XIO      SNSPR     SENSE PRINTER               8B908600
0481 0 1002            SLA      2                                     8B908610
0482 0 4810            BSC      -         IS PRTR CMPL ON             8B908620
0483 0 70FC            MDX      LOGAE     N0                          8B908630
0484 0 C0BE            LD       SNSPR&1   GET IOCC                    8B908640
0485 0 F400 036E       EOR   L  ONE       SET BIT 15                  8B908650
0487 0 00BB            STO      SNSPR&1   SAVE                        8B908660
0488 0 0889      LOGAF XIO      SNSPR     SENSE PRINTER               8B908670
0489 0 1801            SRA      1                                     8B908680
048A 0 4804            BSC      E         IS PRTR BUSY                8B908690
048B 0 70FC            MDX      LOGAF     YES                         8B908700
048C 0 0C00 0302       XID   L  UNMK3     UNMASK ALL LEVELS           8B908710
048E 0 0C00 0304       XIO   L  UNMK4                                 8B908720
0490 0 70B3            MDX      LOG7C     GD EXIT                     8B908730
0491 0 000E      PRWC  DC       14        WDRD CTS FOR PRINTER        8B908740
0492 0 0013            DC       19                                    8B908750
0493 0 0016            DC       22                                    8B908760
0494 0 0019            DC       25                                    8B908770
0495 0 001C            DC       28                                    8B908780
0496 0 001F            DC       31                                    8B908790
0497 0 0022            DC       34                                    8B908800
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0498 0 001C            DC       28                                   8B908810
0499 0 C102      LOGO0 LD    1  2         GET WD TO CONV              8B908820
049A 0 D400 0606       STO   L  HEXWD     SET IN RTN                  8B908830
049C 0 4400 05E6       BSI   L  HEXCV     GO CONVERT           SRC    8B908840
049E 0 CC00 060C       LDD   L  HEXCD     GET CONVERTEO WO            8B908850
04A0 0 DC00 0096       STO   L  PRA       SET IN MSG                  8B908860
04A2 0 C104            LD    1  4         GET MSG ID                  8B908870
04A3 0 D400 0606       STO   L  HEXWD     SET IN RTN                  8B908880
04A5 0 4400 05E6       BSI   L  HEXCV     GO CONVERT TO HEX    SRC    8B908890
04A7 0 CC00 060C       LDO   L  HEXCD     GET CONVERTEO WD            8B908900
04A9 0 D400 0099       STO   L  PRA&3     SET IN MSG                  8B908910
04AB 0 18D0            RTE      16        MOVE Q TO A                 8B908920
04AC 0 0400 009A       STO   L  PRA&4     SET IN MSG                  8B908930
04AE 0 C400 020F       LD    L  RIO       GET RTN NUMBER              8B908940
04B0 0 D400 0606       STO   L  HEXWD     SET IN RTN                  8B908950
04B2 0 4400 05E6       BSI   L  HEXCV     GO CONVERT TO HEX    SRC    8B908960
04B4 0 CC00 060C       LDD   L  HEXCD     GET CDNVERTEO WD            8B908970
04B6 0 DC00 009C       STO   L  PRA&6     SET IN MSG                  8B908980
04B8 0 C400 02E0       LD    L  RA0       GET RTN ADRS                8B908990
04BA 0 0400 0606       STO   L  HEXWD     SET IN RTN                  8B909000
04BC 0 4400 05E6       BSI   L  HEXCV     GO CONVERT TO HEX    SRC    8B909010
04BE 0 CC00 060C       LDD   L  HEXCD     GET CONVERTEO WD            8B909020
04C0 0 D400 0D9F       STO   L  PRA&9     SET IN MSG                  8B909030
04C2 0 18D0            RTE      16        MOVE Q TO A                 8B909040
04C3 0 D400 0DA0       STO   L  PRA&10    SET IN MSG                  8B909050
04C5 0 C105            LD    1  5         GET DRIVE NO                8B909060
04C6 0 D400 0606       STO   L  HEXWD     SET IN RTN                  8B909070
04C8 0 4400 05E6       BSI   L  HEXCV     GO CONVERT           SRC    8B909080
04CA 0 CC00 060C       LDD   L  HEXCD     GET CONVERTEO WD            8B909090
04CC 0 0400 00A2       STO   L  PRA&12    SET IN MSG                  8B909100
04CE 0 1800            RTE      16                                    8B909110
04CF 0 0400 00A3       STO   L  PRA&13    SET IN MSG                  8B909120
04D1 0 4C00 03D6       BSC   L  LOG2C                                 8B909130
                 *                                                    8B909140
                 *XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX        8B909150
                 *XXXXXXXXXXXXXXXXX 1443 PAGE CONTROL ROUTINE X       8B909160
                 *XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX        8B909170
                 *                                                    8B909180
04D3 0 0000      RST   DC       0                                     8B909190
04D4 0 C400 02E1       LD    L  SW0       GET SWITCHES                8B909200
04D6 0 1009            SLA      9         CK FOR 1443                 8B909210
04D7 0 4C10 04DE       BSC   L  RST2,-    BRANCH # NOT 1443           8B909220
04D9 0 0844            XID      RSTX2     SKIP TO CHN 1               8B909230
04DA 0 0845      RST1  XIO      RSTX3     SENSE 1443                  8B909240
04DB 0 1802            SRA      2         CK FOR BUSY                 8B909250
04DC 0 4804            BSC      E         SKIP # NOT BUSY             8B909260
04DD 0 70FC            MDX      RST1      LOOP                        8B909270
04DE 0 C500 02E8 RST2  LD    L1 EDIT&4    GET NUMBER OF TRACKS        8B909280
04E0 0 4C18 04E4       BSC   L  DR9,&-    BRANCH # 9 TRACK            8B909290
04E2 0 C03F            LD       K0700     SET 7 TRACK                 8B909300
04E3 0 7001            MOX      DR9&1     8RANCH                      8B909310
04E4 0 C03E      DR9   LD       K0900     GET 9 TRACK                 8B909320
04E5 0 D400 0E51       STO   L  LN3B      SET IN MSG                  8B909330
04E7 0 C500 02EA       LD    L1 EDIT&6    GET DRIVE MODEL             8B909340
04E9 0 4C18 04ED       BSC   L  MD3,&-    BRANCH # MODEL 3            8B909350
04EB 0 1008            SLA      8         MOVE TO LHW                 8B909360
04EC 0 7001            MDX      MO3&1     BRANCH                      8B909370
04ED 0 C036      MD3   LD       K0300     GET MODEL 3                 8B909380
04EE 0 D400 0E50       STO   L  LN3A      SET IN MSG                  8B909390
04F0 0 C400 02FC       LD    L  EDIT&8    GET MEM SPEED               8B909400
04F2 0 4C18 0500       BSC   L  TMIC,+-   BRANCH # 2 MIC          $   8B909410
04F4 0 4C10 04F0       8SC   L  TMICA,-   BRANCH IF 4 MIC         $   8B909411
04F6 0 C400 0527       LD    L  H0238     SET MSG TO 2.25         $   8B909412
04F8 0 D400 0E5A       STO   L  LN3C      *                      $   8B909413
04FA 0 C400 0528       LD    L  H0205     *                      $   8B909414
04FC 0 7008            MOX      TMICB     CONTINUE               $   8B909415
04FD 0 C400 0526 TMICA LD    L  H0400     GET 4 MIC              $   8B909420
04FF 0 7001            MOX      TMIC&1    BRANCH                     8B909430
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ATE
cC NO.   01JUL66   01NOV66   15MAY67   01SEP67   01OCT67   14NOV69   30JAN70   PROG IO   0BB9-2
            415178   415233   411731   411857   411875   431319   431319A   PAGE   7

ATE
cC NO.   01JUL66   01NOV66   15MAY67   01SEP67   01OCT67   14NOV69   30JAN70   PROG IO   0BB9-2
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0500 0 C024       TMIC  LD       K0200        GET 2 MIC                      8B909440
0501 0 D400 0E5A        STO   L  LN3C         SET IN MSG                     8B909450
0503 0 C400 0529        LD    L  H2020        SET DASHES                  $  8B909451
0505 0 D400 0E5B  TMICB STO   L  LN3C+1       *                           $  8B909452
0507 0 6913             STX   1  SVE&1        SAVE IX 1                      8B909460
0508 0 7100             MDX   1  0            CHECK OR NUMBER                8B909470
0509 0 7003             MDX      SYDR         DRIVE 1                        8B909480
050A 0 6500 200A        LDX   L1 /200A        IX # -0                        8B909490
050C 0 7002             MDX      SYDR1        BRANCH                         8B909500
050D 0 6500 2001  SYDR  LDX   L1 /2001        IX # -1                        8B909510
050F 0 6D00 0E58  SYDR1 STX   L1 LN30         SET IN MSG                     8B909520
0511 0 6700 0E4C        LDX   L3 LN3-1        IX # MSG AORS                  8B909530
0513 0 4400 0C21        BSI   L  LOADV        SET MSG - PRINT                8B909540
0515 0 1010             SLA      16           CLEAR ACC                      8B909550
0516 0 4400 0C19        BSI   L  LOAOK        SET BLANK LINE                 8B909560
0518 0 4400 044C        BSI   L  PCCO         PRINT BLANK                    8B909570
051A 0 6500 0000  SVE   LDX   L1 *-*          RESTORE IX 1                   8B909580
051C 0 4C80 0403        BSC   I  RST          EXIT                           8B909590
051E   0000             BSS   E  0                                           8B909600
051E 0 0100      RSTX2  DC       /0100        IOCC - CARRIAGE SKIP           8B909610
051F 0 3400             DC       /3400        *                              8B909620
0520 0 0000      RSTX3  DC       /0000        IOCC - SENSE 1443              8B909630
0521 0 3701             DC       /3701        *                              8B909640
0522 0 0007      K0700  DC       /0007        CONSTANTS                      8B909650
0523 0 0009      K0900  DC       /0009        *                              8B909660
0524 0 0300      K0300  DC       /0300        *                              8B909670
0525 0 0220      K0200  DC       /0220        *                              8B909680
0526 0 0420      H0400  DC       /0420        *                              8B909690
0527 0 023B      H023B  DC       /023B        *                           $  8B909691
0528 0 0205      H0205  DC       /0205        *                           $  8B909692
0529 0 2020      H2020  DC       /2020        *                           $  8B909693
                        *                                                    8B909700
                 *XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX             8B909710
                 *XXXXXXXXXXXXXXXX ROUTINE TO CONVERT XXXXXXXX              8B909720
                 *XXXXXXXXXXXXXXXXX PRINTER CODE        XXXXXXXX            8B909730
                 *XXXXXXXXXXXXXXXXX TO TYPEWRITER CODE XXXXXXXX             8B909740
                 *XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX             8B909750
                        *                                                    8B909760
052A 0 1010      LOGBC SLA       16                                          8B909770
052B 0 003F            STO       LOX00        CLEAR HALF WO SW               8B909780
052C 0 6937            STX    1  LOGC7&1      SAVE IX 1                       8B909790
052D 0 6A38            STX    2  LOGC8&1      SAVE IX 2                       8B909800
052E 0 6B39            STX    3  LOGC9&1      SAVE IX 3                       8B909810
052F 0 C06F            LO        PRSP         GET CARRIAGE RETURN            8B909820
0530 0 0400 0D92       STO    L  PRA4         SET IN MSG                     8B909830
0532 0 6700 0093       LDX    L3 PRA4&1       IX 3 # AORS MSG                8B909840
0534 0 C300      LOGC1 LD     3  0            GET WO TO CONVERT              8B909850
0535 0 D036            STO       LOX02        SAVE                           8B909860
0536 0 F400 02E3       EOR    L  TERM                                        8B909870
0538 0 4818            BSC       &-           IS IT A TERM                   8B909880
0539 0 7027            MDX       LOGCC                                       8B909890
053A 0 C031      LOGC2 LD        LOX02        GET WO TO CONVERT              8B909900
053B 0 4C18 0556       BSC    L  LOGCA,&-     BRANCH IF ZERO                 8B909910
053D 0 180C            SRA       12           SAVE ZONE                      8B909920
053E 0 0001            STO       LOGC3&1                                     8B909930
053F 0 6500 0000 LOGC3 LDX    L1 0            IX 1 # ZONE                    8B909940
0541 0 C500 056E       LD     L1 LOX04        GET ADRS OF ZONE               8B909950
0543 0 0007            STO       LOGC5&1      SAVE                           8B909960
0544 0 C027            LO        LOX02        GET WO TO CONVERT              8B909970
0545 0 1004            SLA       4            SAVE POSITION                  8B909980
0546 0 180C            SRA       12                                          8B909990
0547 0 0001            STO       LOGC4&1                                     8B910000
0548 0 6600 0000 LOGC4 LDX    L2 0            IX 2 # POSITION                8B910010
054A 0 C600 0000 LOGC5 LD     L2 0            GET TYPEWRITER CODE            8B910020
054C 0 7400 056B       MDX    L  LOX00,0      IS THIS FIRST HALF             8B910030
054E 0 700B            MDX       LOGC6        NO                             8B910040
054F 0 0010            STO       LOX03        YES                            8B910050
0550 0 7401 056B       MDX    L  LOX00,1      SET TO SECONO HALF             8B910060
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0552 0 C019            LD        LOX02        GET WD TO CONVERT              8B910070
0553 0 1008            SLA       8            SET TO SECOND HALF             8B910080
0554 0 D017            STO       LOX02        SAVE                           8B910090
0555 0 70E4            MDX       LOGC2        GO CONVERT                     8B910100
0556 0 DOF2      LOGCA STO       LOGC4&1                                     8B910110
0557 0 CO1A            LD        LOX04&4      GET ADRS                       8B910120
0558 0 DOF2            STO       LOGC5&1      SET                            8B910130
0559 0 70EE            MDX       LOGC4        GO SET BLANK                   8B910140
                 *                                                           8B910150
                 *              SECOND HALF WORD                             8B910160
                 *                                                           8B910170
055A 0 1808      LOGC6 SRA       8            MOVE TO SECONO HALF            8B910180
055B 0 F011            EOR       LOX03        COMBINE WITH FIRST             8B910190
055C 0 0300      LOGCB STO    3  0            SET IN MSG                     8B910200
055D 0 1010            SLA       16                                          8B910210
055E 0 D00C            STO       LOX00        SET TO FIRST HALF              8B910220
055F 0 7301            MDX    3  1            IX 3 # NEXT WD                 8B910230
0560 0 70D3            MDX       LOGC1        CONVERT NEXT WO                8B910240
                 *                                                           8B910250
                 *            FOUND A TERMINATOR                             8B910260
                 *                                                           8B910270
0561 0 4400 061E LOGCC BSI    L  LOG          GO PRINT                       8B910280
0563 0 6500 0000 LOGC7 LDX    L1 0            RESTORE IX 1                   8B910290
0565 0 6600 0000 LOGC8 LDX    L2 0            RESTORE IX 2                   8B910300
0567 0 6700 0000 LOGC9 LDX    L3 0            RESTORE IX 3                   8B910310
0569 0 4C00 0444       BSC    L  LOG7C        GO EXIT                        8B910320
                 *                                                           8B910330
                 *              CONSTANTS                                    8B910340
                 *                                                           8B910350
056B 0 0000      LOX00 DC        0            HALF WORO SWITCH               8B910360
056C 0 0000      LOX02 DC        0            TEMP STORAGE FOR               8B910370
                 *                            WORD TO CONVERT                8B910380
056D 0 0000      LOX03 DC        0            TEMP STORAGE FOR               8B910390
                 *                            TYPEWRITER COOE                8B910400
056E 0 0573      LOX04 DC        PROO         AORS OF ZONE 0                 8B910410
056F 0 057C            OC        PRO1-2       ADRS OF ZONE 1                 8B910420
0570 0 0587            DC        PRO2         AORS OF ZONE 2                 8B910430
0571 0 0593            DC        PRO3-1       ADRS OF ZONE 3                 8B910440
0572 0 0586            DC        PRO2-1       ADRS OF BLANK                  8B910450
                 *                                                           8B910460
                 *             PRINTER CODE TO TYPEWRITER                    8B910470
                 *             CODE CONVERSION TABLE                         8B910480
                 *                                                           8B910490
0573 0 2100      PROO  DC        /2100        0                             8B910500
0574 0 FC00            OC        /FC00        1                             8B910510
0575 0 D800            OC        /D800        2                             8B910520
0576 0 0C00            OC        /0C00        3                             8B910530
0577 0 F000            OC        /F000        4                             8B910540
0578 0 F400            OC        /F400        5                             8B910550
0579 0 D000            OC        /D000        6                             8B910560
057A 0 D400            OC        /D400        7                             8B910570
057B 0 E400            OC        /E400        8                             8B910580
057C 0 E000            OC        /E000        9                             8B910590
057D 0 C400            OC        /C400        0                             8B910600
057E 0 9A00      PRO1  OC        /9A00        S                             8B910610
057F 0 9E00            OC        /9E00        T                             8B910620
0580 0 B200            OC        /B200        U                             8B910630
0581 0 B600            OC        /B600        V                             8B910640
0582 0 9200            OC        /9200        W                             8B910650
0583 0 9600            OC        /9600        X                             8B910660
0584 0 A600            OC        /A600        Y                             8B910670
0585 0 A200            OC        /A200        Z                             8B910680
0586 0 2100            OC        /2100        BLANK                         8B910690
0587 0 8400      PRO2  DC        /8400        -                             8B910700
0588 0 7E00            DC        /7E00        J                             8B910710
0589 0 5A00            DC        /5A00        K                             8B910720
058A 0 5E00            DC        /5E00        L                             8B910730
058B 0 7200            OC        /7200        M                             8B910740
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058C 0 7600          DC      /7600          N              8B910750
058D 0 5200          DC      /5200          O              8B910760
058E 0 5600          DC      /5600          P              8B910770
058F 0 6600          DC      /6600          Q              8B910780
0590 0 6200          DC      /6200          R              8B910790
0591 0 4200          DC      /4200                         8B910800
0592 0 4000          DC      /4000          $              8B910810
0593 0 D600          DC      /D600          *              8B910820
0594 0 3E00   PRO3   DC      /3E00          A              8B910830
0595 0 1A00          DC      /1A00          B              8B910840
0596 0 1E00          DC      /1E00          C              8B910850
0597 0 3200          DC      /3200          D              8B910860
0598 0 3600          DC      /3600          E              8B910870
0599 0 1200          DC      /1200          F              8B910880
059A 0 1600          DC      /1600          G              8B910890
059B 0 2600          DC      /2600          H              8B910900
059C 0 2200          DC      /2200          I              8B910910
059D 0 0200          DC      /0200          .              8B910920
059E 0 0000          DC      /0000          *              8B910930
059F 0 8121   PRSP   DC      /8121          CARRIAGE RETURN 8B910940
              *                                             8B910950
              *               CONSTANTS                     8B910960
              *                                             8B910970
              *               ADRS STRING FOR OCC CALL      8B910980
              *                                             8B910990
05A0 0 02E5   LOGX3  DC      EDIT&1  ADRS OF AREA CODE      8B911000
05A1 0 05A4          DC      LOGX8   AORS OF FUNCTION       8B911010
05A2 0 05A5          DC      LOGX9   AORS OF MODIFIER       8B911020
05A3 0 0D92          DC      PRA4    ADRS OF MSG            8B911030
              *                                             8B911040
              *               FUNCTION AND MODIFIER         8B911050
              *                                             8B911060
05A4   0000          BSS   E 0                              8B911070
05A4 0 0500   LOGX8  DC      /0500   FUNCTION               8B911080
05A5 0 0000   LOGX9  DC      /0000   MODIFIER               8B911090
              *                                             8B911100
              *               MASK CONSTANTS                8B911110
              *                                             8B911120
              *                                             8B911130
              *XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX  8B911140
              *XXXXXXXXXXXXXXX HEX TO DECIMAL CONVERSION X   8B911150
              *XXXXXXXXXXXXXXX ROUTINE                  X    8B911160
              *XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX  8B911170
              *                                             8B911180
05A6 0 0000   HEDEC  DC      0                         SE   8B911190
05A7 0 6B21          STX   3 HEDE4&1  SAVE IX 3             8B911200
05A8 0 6A22          STX   2 HEDE5&1  SAVE IX 2             8B911210
05A9 0 6923          STX   1 HEDE6&1  SAVE IX 1             8B911220
05AA 0 6500 05E1     LDX   L1 OPARA   OUTPUT AREA INDEX     8B911230
05AC 0 6600 05DC     LOX   L2 CVTBL   CONVERSION TABLE IX   8B911240
              *                                             8B911250
05AE 0 C036          LD      WDCON   SET WORD TO CONVERT    8B911260
05AF 0 D028          STD     WORD    IN WORK AREA           8B911270
              *                                             8B911280
05B0 0 6700 060E HEDE1 LDX L3 CODEH   CODE TABLE INDEX      8B911290
              *                                             8B911300
05B2 0 C200          LD    2 0       SET CONVERSION         8B911310
05B3 0 D025          STO     CONVO   CONSTANT IN SW AREA    8B911320
              *                                             8B911330
05B4 0 C023   HEDE2  LD      WORD    CHECK WORD AGAINST     8B911340
05B5 0 9023          S       CONVO   CONVERSION CONSTANT    8B911350
05B6 0 4C28 05BF     BSC   L HEDE3,&Z  BRANCH IF MINUS      8B911360
              *                                             8B911370
05B8 0 8020          A       CONVO   RESTORE NUMBER         8B911380
05B9 0 D01E          STO     WDRD                           8B911390
              *                                             8B911400
05BA 0 C01E          LD      CONVO   SET UP FOR NEXT        8B911410
                                                            8B911420
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05BB 0 8200          A     2 0       CHECK                  8B911430
05BC 0 D01C          STD     CONVO                          8B911440
              *                                             8B911450
05BD 0 7301          MDX   3 1       CODE TABLE INDEX & 1   8B911460
05BE 0 70F5          MDX     HEDE2                          8B911470
              ~                                             8B911480
              *               NEGATIVE RESULT               8B911490
              *                                             8B911500
05BF 0 8200   HEDE3  A     2 0       RESTORE LAST NUMBER    8B911510
05C0 0 D017          STO     WORD                           8B911520
              *                                             8B911530
05C1 0 C300          LD    3 0       SET 1443 CODE IN       8B911540
05C2 0 D100          STD   1 0       OUTPUT AREA            8B911550
              *                                             8B911560
05C3 0 7101          MDX   1 1       OUTPUT AREA INDEX &1   8B911570
05C4 0 7201          MDX   2 1       CONVERSION TBL IX &1   8B911580
              *                                             8B911590
05C5 0 C200          LD    2 0                              8B911600
05C6 0 4C20 05B0     BSC   L HEDE1,Z                        8B911610
              *                                             8B911620
05C8 0 6700 0000 HEDE4 LDX L3 0      RESTORE INDEX REG 3    8B911630
05CA 0 6600 0000 HEDE5 LOX L2 0      RESTORE INDEX REG 2    8B911640
05CC 0 6500 0000 HEDE6 LDX L1 0      RESTORE INDEX REG 1    8B911650
05CE 0 C012          LD      DPARA   GET 1ST CODE AND       8B911660
05CF 0 1008          SLA     8       PACK WITH 2ND          8B911670
05D0 0 E811          OR      OPARA&1                        8B911680
05D1 0 D008          STO     CODE                           8B911690
05D2 0 C010          LD      DPARA&2 GET 3RD CODE AND       8B911700
05D3 0 1008          SLA     8       PACK WITH 4TH          8B911710
05D4 0 E80F          OR      OPARA&3                        8B911720
05D5 0 D005          STO     CODE&1                         8B911730
              *                                             8B911740
05D6 0 4C80 05A6     BSC   I HEDEC   RETURN TO USER      SX 8B911750
              *                                             8B911760
              *               CONVERSION CONSTANTS          8B911770
              *                                             8B911780
05D8 0 0000   WORD   DC      0       WORK AREA              8B911790
05D9 0 0000   CONVO  DC      0       WORK AREA              8B911800
              *                                             8B911810
05DA   0000          BSS   E 0                              8B911820
              *                                             8B911830
05DA 0 0000   CODE   DC      0       PACKED WORDS 1 AND 2   8B911840
05DB 0 0000          DC      0       PACKED WORDS 3 AND 4   8B911850
              *                                             8B911860
05DC 0 03E8   CVTBL  DC      /03E8   1000                   8B911870
05DD 0 0064          DC      /0064   100                    8B911880
05DE 0 000A          DC      /000A   10                     8B911890
05DF 0 0001          DC      /0001   1                      8B911900
05E0 0 0000          DC      /0000   0                      8B911910
              *                                             8B911920
05E1 0 0000   OPARA  DC      0       OUTPUT WORK AREA       8B911930
05E2 0 0000          DC      0                              8B911940
05E3 0 0000          DC      0                              8B911950
05E4 0 0000          DC      0                              8B911960
              *                                             8B911970
05E5 0 0000   WDCON  DC      0       STORAGE/WD TO CONVRT   8B911980
              *                                             8B911990
              *XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX 8B912000
              *XXXXXXXXXXXXXXX HEX TO 1443 HEX    XXXXXXXX   8B912010
              *XXXXXXXXXXXXXXX CONVERSION ROUTINE XXXXXXXX   8B912020
              *XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX 8B912030
              *                                             8B912040
05E6 0 0000   HEXCV  DC      0                         SE   8B912050
05E7 0 6B1B          STX   3 HEXC3&1   SAVE IX 3            8B912060
05E8 0 6A18          STX   2 HEXC2&1   SAVE IX 2            8B912070
05E9 0 6204          LDX   2 4       CONVERSION INDEX       8B912080
              *                                             8B912090
05EA 0 C01B          LD      HEXWD   GET WORD TO CONVERT    8B912100
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        05EB 0 1890            SRT    16            SET A IN Q                    88912110
        05EC 0 1010            SLA    16                                          88912120
        05EO 0 1084     HEXC1  SLT    4             GET CHARACTER                 88912130
        05EE 0 0001            STD    HEXC1&3                                     88912140
        05EF 0 6700 0000       LDX  L3 0            SET CODE TABLE INDEX          88912150
                      *                                                          88912160
        05F1 0 C700 060E       LD   L3 CODEH        GET CODED CHARACTER          88912170
        05F3 0 D600 0606       STD  L2 HEX00-1      AND SAVE                      88912180
        05F5 0 1010            SLA    16                                          88912190
                      *                                                          88912200
        05F6 0 72FF            MDX    2 -1          CHECK IF DONE                 88912210
        05F7 0 70F5            MDX    HEXC1                                       88912220
                      *                                                          88912230
        05F8 0 C011            LD     HEX00&3       PACK CODED WORDS              88912240
        05F9 0 1008            SLA    8                                          88912250
        05FA 0 E80E            OR     HEX00&2                                     88912260
        05FB 0 D010            STD    HEXCD                                       88912270
        05FC 0 C00B            LD     HEX00&1                                     88912280
        05FD 0 1008            SLA    8                                          88912290
        05FE 0 E808            OR     HEX00                                       88912300
        05FF 0 D00D            STD    HEXCD&1                                     88912310
        0600 0 6600 0000 HEXC2 LDX  L2 0            RESTORE IX 2                  88912320
        0602 0 6700 0000 HEXC3 LDX  L3 0            RESTORE IX 3                  88912330
        0604 0 4C80 05E6       BSC  I  HEXCV        RETURN TO USER          SX    88912340
                      *                                                          88912350
                      *                             CONSTANTS                     88912360
                      *                                                          88912370
        0606 0 0000     HEXWD  DC     0             WORD TO CONVERT               88912380
        0607 0 0000     HEX00  DC     0             *                            88912390
        0608 0 0000            DC     0             * UNPACKED CODED              88912400
        0609 0 0000            DC     0             * WORD                        88912410
        060A 0 0000            DC     0             *                            88912420
                      *                                                          88912430
        060C   0000            BSS  E  0                                          88912440
                      *                                                          88912450
        060C 0 0000     HEXCD  DC     0             * PACKED CODED WORD           88912460
        060D 0 0000            DC     0             *                            88912470
                      *                                                          88912480
                      *                             CONVERSION TABLE              88912490
                      *                                                          88912500
        060E 0 000A     CODEH  DC     /000A         0                            88912510
        060F 0 0001            DC     /0001         1                            88912520
        0610 0 0002            DC     /0002         2                            88912530
        0611 0 0003            DC     /0003         3                            88912540
        0612 0 0004            DC     /0004         4                            88912550
        0613 0 0005            DC     /0005         5                            88912560
        0614 0 0006            DC     /0006         6                            88912570
        0615 0 0007            DC     /0007         7                            88912580
        0616 0 0008            DC     /0008         8                            88912590
        0617 0 0009            DC     /0009         9                            88912600
        0618 0 0031            DC     /0031         A                            88912610
        0619 0 0032            DC     /0032         B                            88912620
        061A 0 0033            DC     /0033         C                            88912630
        061B 0 0034            DC     /0034         D                            88912640
        061C 0 0035            DC     /0035         E                            88912650
        061D 0 0036            DC     /0036         F                            88912660
                      *                                                          88912670
                      *XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX               88912680
                      *XXXXXXXXXXXXXXXXX TYPEWRITER OUTPUT ROUTINE X             88912690
                      *XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX            88912700
                      *                                                          88912710
        061E 0 0000     LOG    OC     0                               SE         88912720
                      *                                                          88912730
        061F 0 0C00 043E       XIO  L  MK15         MASK ALL LVLS                88912740
        0621 0 0C00 0440       XIO  L  MK27                                       88912750
                      *                                                          88912760
        0623 0 0838            XIO    SENSE         SENSE FOR READY              88912770
        0624 0 180A            SRA    10                                          88912780
```

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        0625 0 4804            BSC    E                                          88912790
                      *                                                          88912800
        0626 0 3004     WAIT4  WAIT   4             TYPEWRTR NOT RDY             88912810
                      *                                                          88912820
        0627 0 1010            SLA    16                                          88912830
        0628 0 D036            STD    WRDSW         CLEAR 1/2 WD SWITCH          88912840
                      *                                                          88912850
        0629 0 C036            LD     AORS          GET MESSAGE ADDRESS          88912860
        062A 0 D010            STD    LOG01&1                                    88912870
        062B 0 D001            STO    LOG04&1                                    88912880
        062C 0 C400 0D92 LOG04 LD   L  PRA4         GET MSG WORD                 88912890
        062E 0 F400 02E3       EOR  L  TERM         CHECK FOR TERM               88912900
        0630 0 4C18 0654       BSC  L  LOG02,&-     BRANCH IF TERM               88912910
        0632 0 C480 062D       LD   I  LOG04&1      GET MSG WORD                 88912920
        0634 0 F02C            EOR    K2121         CK FOR BLANK                 88912930
        0635 0 4C20 063A       BSC  L  LOG01,Z      BRANCH IF NOT BLANK          88912940
        0637 0 7401 062D LOG05 MDX  L  LOG04&1,1    INCR SCAN ADRS               88912950
        0639 0 70F2            MDX    LOG04         LOOP                          88912960
        063A 0 C400 0D92 LOG01 LD   L  PRA4         GET WORD TO PRINT            88912970
        063C 0 D021            STD    IDARA         SET IN OUTPUT AREA           88912980
                      *                                                          88912990
                      *                                                          88913000
                      *                             OUTPUT A CHARACTER            88913010
                      *                                                          88913020
        063D 0 081C     XIDWR  XID    WRITE         WRITE CHARACTER              88913030
                      *                                                          88913040
        063E 0 081D     XIOSN  XIO    SENSE         CHECK BUSY                   88913050
                      *                                                          88913060
        063F 0 180B            SRA    11                                          88913070
        0640 0 4804            BSC    E                                          88913080
        0641 0 70FC            MDX    XIOSN         BUSY                          88913090
                      *                                                          88913100
                      *                                                          88913110
                      *                             CHECK FOR 1ST 1/2 WORD        88913120
                      *                                                          88913130
        0642 0 C01C            LD     WRDSW         GET 1/2 WORD SWITCH          88913140
        0643 0 4804            BSC    E                                          88913150
        0644 0 7006            MDX    LOG03         GO SETUP FOR NEXT WD         88913160
                      *                                                          88913170
                      *                                                          88913180
                      *                             SET UP FOR 2ND 1/2 WORD       88913190
                      *                                                          88913200
        0645 0 C018            LD     IOARA         GET WORD IN IO AREA          88913210
        0646 0 1008            SLA    8             POSITION 2ND 1/2 WD          88913220
        0647 0 D016            STD    IDARA                                       88913230
        0648 0 7401 065F       MDX  L  WRDSW,1      BUMP WORD SWITCH             88913240
        064A 0 70F2            MDX    XIDWR         GO WRITE 2ND 1/2 WD          88913250
                      *                                                          88913260
                      *                                                          88913270
                      *                             SET UP FOR NEXT WORD          88913280
                      *                                                          88913290
        064B 0 7401 063B LOG03 MDX  L  LOG01&1,1    INCR ADRS TO PRINT           88913300
        064D 0 7401 065F       MDX  L  WRDSW,1      INCR WORD SW                 88913310
        064F 0 C0D0            LD     LOG04&1       GET SCAN ADRS                88913320
        0650 0 90EA            S      LOG01&1       SUB PRINT ADRS               88913330
        0651 0 4C10 063A       BSC  L  LOG01,-      BRANCH # MORE TO PRT         88913340
        0653 0 70E3            MDX    LOG05         BRANCH TO SCAN               88913350
                      *                                                          88913360
                      *                                                          88913370
                      *                             TERMINATOR FOUND EXIT         88913380
                      *                                                          88913390
        0654 0 0C00 0302 LOG02 XIO  L  UNMK3        UNMASK ALL INTERRUPT         88913400
        0656 0 0C00 0304       XIO  L  UNMK4        LEVELS                        88913410
                      *                                                          88913420
        0658 0 4C80 061E       BSC  I  LOG          EXIT                    SX    88913430
                      *                                                          88913440
                      *                             LOG CONSTANTS                 88913450
                      *                                                          88913460
```

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065A  0000            BSS  E  0                                          88913470
065A 0 065E    WRITE DC   IDARA       WRITE IDCC                         88913480
065B 0 0902          DC   /0902                                          88913490
065C 0 0000    SENSE DC   /0000       SENSE IDCC                         88913500
065D 0 0F03          DC   /0F03                                          88913510
065E 0 0000    IOARA DC   0           OUTPUT AREA                        88913520
065F 0 0000    WRDSW DC   0           1/2 WURD SWITCH                    88913530
0660 0 0D92    ADRS  DC   PRA4        MESSAGE ADDRESS                    88913540
0661 0 2121    K2121 DC   /2121                                          88913550
               *                                                         88913560
               *XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX              88913570
               *XXXXXXXXXXXXXXX END PROGRAM RDUTINE XXXXXXX              88913580
               *XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX              88913590
               *                                                         88913600
0662 0 0000    ENO   OC   0                              SE              88913610
0663 0 C400 02E1     LD   L  SWO      GET SW FNC O                       88913620
0665 0 100B          SLA  11                                             88913630
0666 0 4410 03B2     BSI  L  HALT,-   BRANCH # NOT LDDP                  88913640
0668 0 4C00 02EF     BSC  L  MDNT     LODP PROGRAM                       88913650
               *                                                         88913660
               *XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX              88913670
               *XXXXXXXXXXXXXXX COMMDN PRDGRAM CDNSTANTS XX              88913680
               *XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX              88913690
066A  0000            BSS  E  0                                          88913700
066A 0 0021    CONV  DC   33          2 MIC MEM CON MULT                 88913710
066B 0 0042    CDNV1 DC   66          4 MIC MEM CDN MULT                 88913720
066C 0 002C    SPEC  DC   /002C       SPACE                             88913730
0660 0 0308    CDN   DC   776         MIN RD TIME AT LD PT               88913740
066E 0 0712          DC   1810        MAX RO TIME AT LO PT               88913750
066F 0 0308          DC   776         MIN WT TIME AT LD PT               88913760
0670 0 048B          OC   1163        MAX WT TIME AT LD PT               88913770
0671 0 0080    CON1  OC   128         MIN RO TIME NDT LD                 88913780
0672 0 012F          OC   303         MAX RD TIME NDT LD                 88913790
0673 0 0080          OC   128         MIN WT TIME NDT LO                 88913800
0674 0 00C3          DC   195         MAX WT TIME NOT LD                 88913810
0675 0 00F8    MT5XA DC   248         UPPER GR LIMIT-9TR                 88913820
0676 0 0131          DC   305         UPPER GR LIMIT-7TR                 88913830
0677 0 00F5          OC   245         LOWER GR LIMIT-9TR                 88913840
0678 0 012E          OC   302         LOWER GR LIMIT-7TR                 88913850
0679 0 01E0    MT1XO DC   480         BCKWRD TD FDRWRD TME               88913860
067A 0 0003    MT5XO OC   3           DELAY # 5 SEC                      88913870
067B 0 0D40          DC   3392                                           88913880
067C 0 0002          DC   2           4                                  88913890
067D 0 7100          DC   28928                                          88913900
067E 0 0001          OC   1           3                                  88913910
067F 0 04C0          OC   54464                                          88913920
0680 0 0001          DC   1           2                                  88913930
0681 0 3880          DC   14464                                          88913940
0682 0 0000          OC   0           1                                  88913950
0683 0 9C40          DC   40000                                          88913960
0684 0 0000          DC   0           500 MILLISEC                       88913970
0685 0 4E20          OC   20000                                          88913980
0686 0 0000          OC   0           400                                88913990
0687 0 3E80          DC   16000                                          88914000
0688 0 0000          DC   0           300                                88914010
0689 0 2EE0          OC   12000                                          88914D20
068A D 0000          OC   0           200                                88914030
068B 0 1F40          OC   8000                                           88914040
068C 0 0000          DC   0           100                                88914050
0680 0 0FA0          DC   4000                                           88914060
068E 0 0000          OC   0           80.00                              88914070
068F 0 0C80          DC   3200                                           88914080
0690 0 0000          OC   0           60.00                              88914090
0691 0 0960          OC   2400                                           88914100
0692 0 0000          OC   0           40.00                              88914110
0693 0 0640          OC   1600                                           88914120
0694 0 0000          DC   0           35.00                              88914130
0695 0 0578          OC   1400                                           88914140
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0696 0 0000            DC   0          30.00      88914150
0697 0 0480            DC   1200                   88914160
0698 0 0000            DC   0          25.00      88914170
0699 0 03E8            OC   1000                   88914180
069A 0 0000            DC   0          22.50      88914190
069B 0 0384            DC   900                    88914200
069C 0 0000            OC   0          20.00      88914210
069D 0 0320            OC   800                    88914220
069E 0 0000            DC   0          17.50      88914230
069F 0 02BC            DC   700                    88914240
06A0 0 0000            DC   0          15.00      88914250
06A1 0 0258            DC   600                    88914260
06A2 0 0000            OC   0          12.50      88914270
06A3 0 01F4            DC   500                    88914280
06A4 0 0000            DC   0          10.00      88914290
06A5 0 0190    MT540   DC   400                    88914300
06A6 0 0000            OC   0          09.00      88914310
06A7 0 0168            DC   360                    88914320
06A8 0 0000            DC   0          08.00      88914330
06A9 0 0140            OC   320                    88914340
06AA 0 0000            DC   0          07.00      88914350
06AB 0 0118            DC   280                    88914360
06AC 0 0000            OC   0          06.D0      88914370
06A0 0 00F0            DC   240                    88914380
06AE 0 0000            DC   0          05.50      88914390
06AF 0 00DC            OC   220                    88914400
06B0 0 0000            OC   0          05.00      88914410
06B1 0 00C8    MT591   DC   200                    88914420
06B2 0 0000            DC   0          04.50      88914430
06B3 0 00B4            DC   180                    88914440
06B4 0 0000            OC   0          04.00      88914450
06B5 0 00A0            DC   160                    88914460
06B6 0 0000            OC   0          03.50      88914470
06B7 0 008C            OC   140                    88914480
06B8 0 0000            DC   0          03.00      88914490
06B9 0 0078            DC   120                    88914500
06BA 0 0000            DC   0          02.75      88914510
06BB 0 006E            OC   110                    88914520
06BC 0 0000            DC   0          02.50      88914530
06BD 0 0064            DC   100                    88914540
06BE 0 0000            OC   0          02.25      88914550
06BF 0 005A            DC   90                     88914560
06C0 0 0000            DC   0          02.00      88914570
06C1 0 0050            DC   80                     88914580
06C2 0 0000            DC   0          01.75      88914590
06C3 0 0046            DC   70                     88914600
06C4 0 0000            DC   0          01.50      88914610
06C5 0 003C            DC   60                     88914620
06C6 0 0000            DC   0          01.25      88914630
06C7 0 0032            DC   50                     88914640
06C8 0 0000            OC   0          01.10      88914650
06C9 0 002C            OC   44                     88914660
06CA 0 0000            OC   0          01.00      88914670
06CB 0 0028            DC   40                     88914680
06CC 0 0000            OC   0          00.90      88914690
06CD 0 0024            DC   36                     88914700
06CE 0 0000            OC   0          00.80      88914710
06CF 0 0020            OC   32                     88914720
06D0 0 0000            OC   0          00.70      88914730
06D1 0 001C            DC   28                     88914740
0602 0 0000            DC   0          00.60      88914750
0603 0 0018            DC   24                     88914760
0604 0 0000            DC   0          00.55      88914770
0605 0 0016            OC   22                     88914780
0606 0 0000            DC   0          00.50      88914790
0607 0 0D14    MT506   OC   20                     88914800
0608 0 03C0    TURA2   DC   960   MOOEL 2 TURNAROUNO   88914810
0609 0 0780    TURA1   DC   1920  MOOEL 1 TURNAROUNO   88914820
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06DA 0 4D92        MD1LM DC      19B58         MODEL 1 RO LIMIT              88914830
06DB 0 0003        GPHLM DC      3             LINE LIMIT MODIFIER          88914840
06DC 0 0000        MLGX7 DC      0             CONVERT MULTIPLIER           88914850
06DD 0 0025        MOD1S DC      37            MODEL 1 TAPE SPEED           88914860
06DE 0 004B        MDD2S DC      75            MODEL 2 TAPE SPEED           88914870
060F 0 0070        INPSE DC      112           MODEL 3 TAPE SPEED           88914880
                   *                                                        88914890
                   *XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX*          88914900
                   *XXXXXXXXXXXXXXXXX DEVICE STATUS TABLE XXXXXX            88914910
                   *XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX*          88914920
                   *                                                        88914930
06E0 0 0000        DST   DC      0             0    MAX TIME FOR WRT        88914940
06E1 0 0000              DC      0             1    MIN TIME FOR WRT        88914950
06E2 0 0000              DC      0             2    MAX TIME FOR RD         88914960
06E3 0 0000              DC      0             3    MIN TIME FOR RO         88914970
06E4 0 0000              DC      0             4    ACTUAL WRT TIME         88914980
06E5 0 0000              DC      0             5    ACTUAL RO TIME          88914990
06E6 0 0000              DC      0             6    WO CT                   88915000
06E7 0 0000              DC      0             7    LAST OSW                88915010
06E8 0 0000              DC      0             8    AREA CODE               88915020
06E9 0 0000              DC      0             9    FUNCTION                88915030
06EA 0 0000              DC      0             10   MODIFIER                88915040
06EB 0 06E8              DC      DST&8         11   ADRS OF AREA COD        88915050
06EC 0 06E9              DC      DST&9         12   ADRS OF FUNCTION        88915060
06ED 0 06EA              DC      DST&10        13   ADRS OF MODIFIER        88915070
06EE 0 0E9C              DC      IOA           14   ADRS OF I/O AREA        88915080
06EF 0 0000              DC      0             15   NUMBER OF TRACKS        88915090
                   *                                                        88915100
                   *XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX           88915110
                   *XXXXXXXXXXXXXXXXX SUPERVISOR ROUTINE XXXXXXXX           88915120
                   *XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX           88915130
                   *                                                        88915140
                   *                                                        88915150
                   *                         CHECK FOR DRIVE READY          88915160
                   *                                                        88915170
06F0 0 6100        MONT4 LOX     1 0           SET IXING FOR DR 0           88915180
06F1 0 6600 06E0         LOX     L2 DST                                     88915190
06F3 0 C400 02E1         LD      L SW0         GET CONTROL SWS              88915200
06F5 0 4828              BSC     &Z            IS OR 0 TO BE RUN            88915210
06F6 0 701A              MDX     MON25         NO                           88915220
06F7 0 4400 0807         BSI     L OSW0        SENSE DRIVE          SRC     88915230
06F9 0 4804              BSC     E             IS DRIVE READY               88915240
06FA 0 706F              MDX     MON11         NO                           88915250
06FB 0 4400 014F         BSI     L BEGIN       SET CONSTANTS        SRC     88915260
                   *                                                        88915270
                   *                         SET DSTO TO DRIVE 0            88915280
                   *                                                        88915290
06F0 0 4400 04D3         BSI     L RST         RESTORE PRINTER              88915300
06FF 0 1010              SLA     16                                         88915310
0700 0 D400 020F         STO     L RIO         ZERO RTN NO                  88915320
0702 0 C400 02E8         LD      L EDIT&4      GET NO TRACKS                88915330
0704 0 D20F              STO     2 15          SET IN DST                   88915340
0705 0 C400 02E4         LD      L EDIT        GET AREA COOE                88915350
0707 0 0208              STO     2 8           SET IN DST                   88915360
0708 0 F500 075F         EOR     L1 MONX0      SET OR SELECTION             88915370
070A 0 0400 02ED         STO     L ACTI        SET                          88915380
                   *                                                        88915390
                   *                         CHECK PROG HALT SW-BIT 15      88915400
                   *                                                        88915410
070C 0 C400 02E1   MONT0 LD      L SW0         GET SW FNC 0                 88915420
070E 0 4804              BSC     E             IS PROG HALT SW ON           88915430
070F 0 7006              MDX     MON23         YES                          88915440
0710 0 7007              MDX     MON22         NO                           88915450
                   *                                                        88915460
0711 0 C400 093B   MON25 LD      L PGSW        GET PROG SW                  88915470
0713 0 4820              BSC     Z             IS PROGRAM COMPLETE          88915480
0714 0 7070              MDX     MON24         YES                          88915490
0715 0 7027              MDX     MONTC         NO                           88915500
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                   *******************************************              88915510
0716 0 4400 03B2   MON23 BSI     L HALT                          *          88915520
                   *******************************************              88915530
                   *                                                        88915540
                   *                                                        88915550
                   *                         CHECK FOR ROUTINE SELECTED     88915560
                   *                                 IN BIT SWITCHES        88915570
                   *                                                        88915580
0718 0 C400 02E2   MON22 LD      L SW1         GET SW FNC 1                 88915590
071A 0 4820              BSC     Z             IS A RTN SELECTED            88915600
071B 0 7004              MDX     MONTF         YES                          88915610
071C 0 C400 020F   MDNT6 LD      L RID         GET RTN NO                   88915620
071E 0 8400 0925   MDN10 A       L MTTX1       ADD 1                        88915630
0720 0 000C        MONTF STO     MONT7&1                                    88915640
0721 0 0400 020F         STO     L RID         SAVE                         88915650
0723 0 4400 07F0         BSI     L RWO         GO REWIND            SRC     88915660
0725 0 630A              LDX     3 10          SET UP I/O AREA              88915670
0726 0 C400 0927         LD      L MTTX6                                    88915680
0728 0 0700 0E9C   MONT8 STO     L3 IOA                                     88915690
072A 0 73FF              MDX     3 -1                                       88915700
072B 0 70FC              MDX     MONT8                                      88915710
072C 0 6700 0000   MONT7 LDX     L3 0          IX 3 # RTN NUMBER            88915720
072E 0 C700 0734         LD      L3 MONT9      GET ROUTINE ADRS             88915730
0730 0 D400 02E0         STO     L RAD         SAVE FOR PRINT               88915740
0732 0 4F80 0734         BSC     I3 MONT9      TRANSFER TO RTN              88915750
                   *                                                        88915760
                   *                         TABLE OF ROUTINE ADDRESSES     88915770
                   *                                                        88915780
0734 0 0771        MONT9 DC      MONR1         ERROR                        88915790
0735 0 093C              DC      MTT01         ROUTINE NUMBER 1             88915800
0736 0 0976              DC      MTT02                        2             88915810
0737 0 09C2              DC      MTT03                        3             88915820
0738 0 09C9              DC      MTT04                        4             88915830
0739 0 09CF              DC      MTT05                        5             88915840
073A 0 0C71              DC      MTT07                        6             88915850
073B 0 0771              DC      MONR1         PROGRAM COMPLETE             88915860
073C 0 0007        PGCM  DC      7             PGCM-MONT9-1 NO OF ROUTINES  88915870
                   *                                                        88915880
                   *                         SET UP TO CK DR 1              88915890
                   *                                                        88915900
073D 0 6101        MONTC LDX     1 1           SET IXING FOR DR 1           88915910
073E 0 6600 06E0         LDX     L2 DST                                     88915920
0740 0 C400 02E1         LD      L SW0         GET CONTROL SWS              88915930
0742 0 1001              SLA     1                                          88915940
0743 0 4828              BSC     &Z            IS DR 1 TO BE RUN            88915950
0744 0 70CC              MDX     MON25         NO                           88915960
0745 0 C400 02E9         LD      L EDIT&5      GET NO TRKS-DR 1             88915970
0747 0 4C28 0711         BSC     L MON25,&Z    BRANCH # NOT AVAIL          88915980
0749 0 4400 0807         BSI     L OSW0        GO SENSE DR          SRC     88915990
074B 0 4804              BSC     E             IS DRIVE READY               88916000
074C 0 7014              MDX     MONTE         NO                           88916010
074D 0 4400 014F         BSI     L BEGIN       SET CONSTANTS        SRC     88916020
                   *                                                        88916030
                   *                         SET DSTO TO DRIVE 1            88916040
                   *                                                        88916050
074F 0 4400 04D3         BSI     L RST         RESTORE PRINTER              88916060
0751 0 C400 02E9         LD      L EDIT&5      GET NO TRACKS                88916070
0753 0 D20F              STO     2 15          SET IN DST                   88916080
0754 0 C400 02E4         LD      L EDIT        GET AREA CODE                88916090
0756 0 D208              STO     2 8           SET IN DST                   88916100
0757 0 F500 075F         EOR     L1 MONX0      SET OR SEL                   88916110
0759 0 0400 02ED         STO     L ACTI        SET OR SEL                   88916120
075B 0 1010              SLA     16                                         88916130
075C 0 D400 020F         STO     L RID         SAVE                         88916140
075E 0 70AD              MDX     MONT0         GO TEST DR 1                 88916150
075F 0 0000        MONX0 DC      0             DR 0 SELECTION               88916160
0760 0 0020              DC      /0020         DR 1 SELECTION               88916170
                   *                                                        88916180
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                          *                              ORIVE 1 IS NOT REAOY         88916190
                          *                                                           88916200
     0761 0 4400 083C    MONTE 8SI  L  MLG        OR 1 NOT READY                      88916210
     0763 0 OF10          OC        MSG5&4                                            88916220
     0764 0 OE4B          OC        NOTE1&26                                          88916230
     0765 0 C001    C001  OC        /C001         IO C1                               88916240
     0766 0 0000          OC        /0000         LINE 0-FORM 0                       88916250
     0767 0 7401 093B     MOX    L  PGSW,1                                            88916260
     0769 0 70A7          MOX       MON25                                            88916270
                          *                                                           88916280
                          *                              ORIVE 0 IS NOT REAOY         88916290
                          *                                                           88916300
     076A 0 4400 083C    MON11 BSI  L  MLG        OR 0 NOT READY                      88916310
     076C 0 OF10          OC        MSG5&4                                            88916320
     0760 0 OE4B          OC        NOTE1&26                                          88916330
     076E 0 C000    C000  OC        /C000         IO C0                               88916340
     076F 0 0000          OC        /0000         LINE 0-FORM 0                       88916350
     0770 0 70A0          MOX       MON25                                            88916360
                          *                                                           88916370
                          *                              RETURN FROM ROUTINES         88916380
                          *                              CHECK FOR ALL RTNS RUN       88916390
                          *                                                           88916400
     0771 0 4400 0306    MONR1 BSI  L  ROSWS      REAO SWS                            88916410
     0773 0 C400 020F     LO     L  RIO           GET RTN NO                          88916420
     0775 0 90C6          S         PGCM          SUB TOTAL RTNS                      88916430
     0776 0 4820          BSC       Z             ARE ALL RTNS RUN                    88916440
     0777 0 7094          MOX       MONTO         NO                                  88916450
                          *                                                           88916460
                          *                              ALL ROUTINES COMPLETE-CK     88916470
                          *                              FOR PROGRAM COMPLETE         88916480
                          *                                                           88916490
     0778 0 4400 07F0     BSI    L  RWO           REWINO ORIVE                        88916500
     077A 0 7401 093B     MOX    L  PGSW,1                                            88916510
     077C 0 4400 083C     BSI    L  MLG           ALL RTNS RUN                        88916520
     077E 0 OF21          OC        MSG6&4                                            88916530
     077F 0 OF49          OC        MSG15&8                                           88916540
     0780 0 A000    A000  OC        /A000         IO AO                               88916550
     0781 0 0000          OC        /0000         LINE 0-FORM 0                       88916560
     0782 0 7100          MOX    1  0             WAS RUN ON ORIVE 0                   88916570
     0783 0 7080          MOX       MON25                                            88916580
     0784 0 70B8          MOX       MONTC         YES                                 88916590
                          *                                                           88916600
                          *                              PROGRAM IS COMPLETE          88916610
                          *                                                           88916620
     0785 0 4400 083C    MON24 BSI  L  MLG        PROGRAM COMPLETE                    88916630
     0787 0 OF21          OC        MSG6&4                                            88916640
     0788 0 OF51          OC        MSG16&8                                           88916650
     0789 0 A001    A001  OC        /A001         IO A1                               88916660
     078A 0 0000          OC        /0000         LINE 0-FORM 0                       88916670
                          ********************************-***************-           88916680
     078B 0 4400 0662     BSI    L  ENO           TERMINATE            *              88916690
                          **********************************************               88916700
                          *                                                           88916710
                          *                                                           88916720
                          *XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX                 88916730
                          *XXXXXXXXXXXXXXXX TIMEO WRITE ROUTINE XXXXXXX                88916740
                          *XXXXXXXXXXXXXXXX ROUTINE CALL         XXXXXXX               88916750
                          *XXXXXXXXXXXXXXXX BSI  L  TMWRT         XXXXXXX              88916760
                          *XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX                 88916770
                          *                                                           88916780
     078D 0 0000    TMWRT OC        0                           SE                    88916790
     078E 0 C030          LO        TWRX3         MOOIFY TIME RTN/WRT                 88916800
     078F 0 000F          STO       TMWR9                                            88916810
     0790 0 C500 07B0    TMR01 LO  L1 TWRX1       GET SENSE WO CTR                    88916820
     0792 0 F400 02E4     EOR    L  EOIT          SET AREA COOE                       88916830
     0794 0 0026          STO       SNWC1         SET IN IOCC                         88916840
     0795 0 6B10          STX    3  TMWRO&1       SAVE IX 3                           88916850
     0796 0 1010          SLA       16                                               88916860
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     0797 0 D024          STO       TWRXO         CLEAR COUNT                         88916870
                          *****************************/*************                 88916880
     0798 0 4400 0373     BSI    L  OCC           GO WRITE             *              88916890
     079A 0 06EB    TMWR1 DC        OST&11        AOR OF STRING        *              88916900
                          ***************/***************************                 88916910
                          *                                                           88916920
                          *                              TIME A OOUBLE CHANGE IN      88916930
                          *                              THE WORD COUNTER             88916940
                          *                                                           88916950
     079B 0 0C00 07BA    TMWR2 XIO  L  SNWC       SENSE WO CTR                        88916960
     079D 0 8400 07C7     A      L  TMRX2         AOO OESIREO                         88916970
     079F 0 4C30 07A5    TMWR9 BSC  L  TMWRO,-Z   HAS CTR CHANGEO                     88916980
     07A1 0 7401 07BC    TMWR3 MOX  L  TWRX0,1    NO-STEP COUNT                       88916990
     07A3 0 4C00 079B     BSC    L  TMWR2         LOOP                                88917000
     07A5 0 6700 0000    TMWRO LOX L3 0           RESTURE IX 3                        88917010
     07A7 0 3005    WAIT5 WAIT    5               WAIT FOR RO OR WRT                  88917020
     07A8 0 4C00 082A     BSC    L  INTR                                             88917030
                          *                                                           88917040
                          *                              INTERRUPT RETURN             88917050
                          *                                                           88917060
     07AA 0 C207    TMWR4 LO      2 7             GET LAST OSW                        88917070
     07AB 0 E480 092B     ANO    L  MTTY8         CK FOR CORRECT                      88917080
     07AD 0 4820          BSC       Z             IS IT CORRECT                       88917090
     07AE 0 7002          MOX       TMWR6         NO                                  88917100
     07AF 0 4C80 0780    TMWR8 BSC  I  TMWRT      RETURN                        SX    88917110
                          *                                                           88917120
                          *                              NOT CORRECT-ABORT THE TEST   88917130
                          *                                                           88917140
     07B1 0 4400 083C    TMWR6 8SI  L  MLG        TEST ABORTEO                        88917150
     07B3 0 OF41          OC        MSG14&4                                           88917160
     07B4 0 OF09          OC        MSG2&8                                            88917170
     07B5 0 E004    E004  OC        /E004         IO E4                               88917180
     07B6 0 0002          OC        /0002         LINE 0- FORM 2                      88917190
     07B7 0 4C00 071C    TMWR7 BSC  L  MONT6      GO RESTART THE RTN                  88917200
                          *                                                           88917210
                          *                              SENSE WORO CTR IOCC          88917220
                          *                                                           88917230
     07BA    0000         BSS    E  0                                                 88917240
     07BA 0 0000    SNWC  OC        0                                                 88917250
     078B 0 0000    SNWC1 OC        0                                                 88917260
                          *                                                           88917270
                          *                              WRITE TIME                   88917280
                          *                                                           88917290
     07BC 0 0000    TWRXO OC        0                                                 88917300
     07BD 0 0710    TWRX1 OC        /0710         SENSE WO CTR-OR 0                   88917310
     078E 0 0730    TWRX2 OC        /0730                            1                88917320
     07BF 0 4C30    TWRX3 OC        /4C30                                             88917330
                          *                                                           88917340
                          *XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX               88917350
                          *XXXXXXXXXXXXXXXX TIMED REAO ROUTINE XXXXXXXX                88917360
                          *XXXXXXXXXXXXXXXX ROUTINE CALL       XXXXXXX                 88917370
                          *XXXXXXXXXXXXXXXX BSI  L  TMROT       XXXXXXX               88917380
                          *XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX               88917390
     07C0 0 0000    TMROT OC        0                           SE                    88917400
     07C1 0 C006          LO        TMRX3         MODIFY TIME RTN/RO                  88917410
     07C2 0 000C          STO       TMWR9                                            88917420
     07C3 0 70CC          MOX       TMRD1         GO TIME A READ                      88917430
                          *                                                           88917440
                          *                              INTERRUPT RETURN             88917450
                          *                                                           88917460
     07C4 0 COFB    TMRO4 LO        TMROT         GET RETURN                          88917470
     07C5 0 00C7          STO       TMWRT         SET                                 88917480
     07C6 0 70E3          MDX       TMWR4                                            88917490
     07C7 0 000A    TMRX2 OC        /000A                                            88917500
     07C8 0 4C10    TMRX3 OC        /4C10                                            88917510
                          *                                                           88917520
                          *                                                           88917530
                          *XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX               88917540
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                     *XXXXXXXXXXXXXXXXX COMMON BACKSPACE ROUTINE XX    8B917550
                     *XXXXXXXXXXXXXXXXX ROUTINE CALL              XX    8B917560
                     *XXXXXXXXXXXXXXXXX BSI  L  BSP               XX    8B917570
                     *XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX          8B917580
                     *                                                  8B917590
     07C9 0 0000     BSP   DC    0                             SE       8B917600
     07CA 0 6B08           STX   3 BSP2&I      SAVE IX 3                 8B917610
     07CB 0 403B     BSP3  BSI     DSW0        SENSE DRIVE      SRC      8B917620
     07CC 0 4C04 07C8       BSC   L  BSP3,E    BRANCH # NOT READY       8B917630
     07CE 0 1803           SRA     3                                    8B917640
     07CF 0 4C04 07D2       BSC   L  BSP2,E    IS DR AT LD PT           8B917650
     07D1 0 7004           MDX     BSP4        NO                       8B917660
     07D2 0 6700 0000 BSP2 LDX   L3 0          RESTORE IX 3             8B917670
     07D4 0 4C80 07C9       BSC   I  BSP       EXIT             SX      8B917680
                     *                                                  8B917690
                     *                 DRIVE IS NOT READY               8B917700
                     *                                                  8B917710
                     *                                                  8B917720
                     *                 DRIVE IS NOT AT LOAD POINT       8B917730
                     *                                                  8B917740
     07D6 0 C500 07E0 BSP4 LD    L1 BSPX1      GET MODIFIER             8B917750
     07D8 0 D20A           STO     2 10        SET IN DST               8B917760
     07D9 0 C02A           LD        RWDX0     GET FUNCTION             8B917770
     07DA 0 D209           STO     2 9         SET IN DST               8B917780
                     *******************************************        8B917790
     07DB 0 4400 0373       BSI   L  DCC       GO BACKSPACE     *       8B917800
     07DD 0 06E8     BSP6  DC      DST&11      ADRS OF STRING   *       8B917810
                     *******************************************        8B917820
     07DE 0 3006     WAIT6 WAIT    6           WAIT FOR BSP INTRPT      8B917830
     07DF 0 7002           MDX     BSPI2                                8B917840
                     *                                                  8B917850
                     *                 BACKSPACE CONSTANTS              8B917860
                     *                                                  8B917870
     07E0 0 000B     BSPX1 DC      /000B                                8B917880
     07E1 0 002B           DC      /002B                                8B917890
                     *                                                  8B917900
                     *                 CHECK DRIVE                      8B917910
                     *                                                  8B917920
     07E2 0 C207     BSPI2 LD      2 7         GET LAST DSW             8B917930
     07E3 0 4804           BSC     E           IS DRIVE READY           8B917940
     07E4 0 7003           MDX     BSPI3       NO                       8B917950
     07E5 0 1806           SRA     6                                    8B917960
     07E6 0 4804           BSC     E           IS DP COMPLETE ON        8B917970
     07E7 0 70EA           MDX     BSP2                                 8B917980
     07E8 0 4400 083C BSPI3 BSI  L  MLG        BACKSPACE ERROR          8B917990
     07EA 0 0F30           DC      MSG13&4                              8B918000
     07EB 0 0F09           DC      MSG2&8                               8B918010
     07EC 0 E003     E003  DC      /E003       ID E3                    8B918020
     07ED 0 0002           DC      /0002       LINE 0-FORM 2            8B918030
                     *******************************************        8B918040
     07EE 0 4400 0662       BSI   L  END       TERMINATE        *       8B918050
                     *******************************************        8B918060
                     *                                                  8B918070
                     *XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX          8B918080
                     *XXXXXXXXXXXXXXXXX COMMON REWIND ROUTINE XXXXX      8B918090
                     *XXXXXXXXXXXXXXXXX ROUTINE CALL          XXXXX      8B918100
                     *XXXXXXXXXXXXXXXXX BSI  L  RWD           XXXXX      8B918110
                     *XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX          8B918120
                     *                                                  8B918130
     07F0 0 0000     RWD   DC      0                            SE      8B918140
     07F1 0 4015     RWD3  BSI     DSW0        SENSE DRIVE      SRC     8B918150
     07F2 0 C011           LD        RWDX0     GET FUNCTION             8B918160
     07F3 0 0209           STO     2 9         SET IN DST               8B918170
     07F4 0 C500 0805       LD    L1 RWDX1     GET MODIFIER             8B918180
     07F6 0 D20A           STO     2 10        SET IN DST               8B918190
     07F7 0 C207           LD      2 7         GET LAST DSW             8B918200
     07F8 0 4C04 07F1       BSC   L  RWD3,E    BRANCH-OR NOT READY      8B918210
     07FA 0 1803           SRA     3           YES                      8B918220
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     07FB 0 4C04 07FE       BSC   L  RWD2,E    IS DR AT LOAD PT         8B91B230
     07FD 0 7002           MDX     RWD4        NO                       8B91B240
     07FE 0 4C80 07F0 RWD2 BSC   I  RWD        RETURN TO PROG   SX      8B91B250
                     *                                                  8B91B260
                     *                 DRIVE IS NOT AT LD               8B91B270
                     *                                                  8B91B280
                     ******************************************         8B91B290
     0800 0 4400 0373 RWD4 BSI   L  DCC        GO REWIND        $       8B91B300
     0802 0 06EB           DC      DST&11      ADRS OF STRING   *       8B91B310
                     ******************************************         8B91B320
     0803 0 70ED           MDX     RWD3                                 8B91B330
                     *                                                  8B91B340
                     *                 REWIND CONSTANTS                 8B91B350
                     *                                                  8B91B360
     0804 0 0400     RWDX0 DC      /0400       FUNCTION CNTRL           8B91B370
     0805 0 0004     RWDX1 DC      /0004       RWD DR 0                 8B91B380
     0806 0 0024           DC      /0024       RWD DR 1                 8B91B390
                     *                                                  8B91B400
                     *XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX          8B91B410
                     *XXXXXXXXXXXXXXXXX SENSE DEVICE ROUTINE    X        8B91B420
                     *XXXXXXXXXXXXXXXXX ROUTINE CALL            X        8B91B430
                     *XXXXXXXXXXXXXXXXX BSI  L  DSW             X        8B91B440
                     *XXXXXXXXXXXXXXXXX DC   0 DR 1             X        8B91B450
                     *XXXXXXXXXXXXXXXXX 0 # RETURN WHEN READY   X        8B91B460
                     *XXXXXXXXXXXXXXXXX 1 # RETURN WITH SENSE WD X       8B91B470
                     *XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX          8B91B480
                     *                                                  8B91B490
     0807 0 0000     DSW0  DC      0                            SE      8B91B500
     0808 0 6302           LDX   3 2           SET FOR DOUBLE SENSE     8B91B510
     0809 0 C500 081D DSW5 LD    L1 DSWX1      GET MODIFIER             8B91B520
     080B 0 D20A           STO     2 10        SET MOD                  8B91B530
     080C 0 C20B           LD      2 11        GET ADR AREA CODE        8B91B540
     080D 0 D005           STO       DSW1      SET IN CALL              8B91B550
     080E 0 C20D           LD      2 13        GET MOD ADR              8B91B560
     080F 0 D004           STO       DSW2      SET IN CALL              8B91B570
     0810 0 6B06     DSW7  STX   3 DSW8&1      SAVE INDEX 3             8B91B580
                     ******************************************         8B91B590
     0811 0 4400 03A2       BSI   L  DIND      GO SENSE         *       8B91B600
     0813 0 0000     DSW1  DC      0           AREA CODE ADRS   *       8B91B610
     0814 0 0000     DSW2  DC      0           MODIFIER         *       8B91B620
     0815 0 0000           DC      0           LOAD A RETURN    *       8B91B630
                     ******************************************         8B91B640
     0816 0 6700 0000 DSW8 LDX   L3 0          RESTORE INDEX 3          8B91B650
     0818 0 73FF           MDX     3 -1        IS THIS THE SECOND       8B91B660
     0819 0 70F6           MDX     DSW7        NO-GO SENSE AGAIN        8B91B670
     081A 0 D207           STO     2 7         SET IN DST               8B91B680
     081B 0 4C80 0807       BSC   I  DSW0      RETURN           SX      8B91B690
                     *                                                  8B91B700
                     *                 CONSTANTS USED BY DSW            8B91B710
                     *                                                  8B91B720
     081D 0 0000     DSWX1 DC      0           MODIFIER FOR DRIVE 0     8B91B730
     081E 0 0020           DC      /0020       MODIFIER FOR DRIVE 1     8B91B740
                     *                                                  8B91B750
                     *                                                  8B91B760
                     *XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX          8B91B770
                     *XXXXXXXXXXXXXXXXX ROUTINE TO SET NORMAL   XX       8B91B780
                     *XXXXXXXXXXXXXXXXX INTERRUPT RETURN        XX       8B91B790
                     *XXXXXXXXXXXXXXXXX ROUTINE CALL            XX       8B91B800
                     *XXXXXXXXXXXXXXXXX BSI  L  INTRT           XX       8B91B810
                     *XXXXXXXXXXXXXXXXX DC   RETURN ADRS        XX       8B91B820
                     *XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX          8B91B830
                     *                                                  8B91B840
     081F 0 0000     INTRT DC      0                            SE      8B91BB50
     0820 0 6D00 082B       STX   L1 INTR&1    SAVE IX 1                8B91BB60
     0822 0 C480 081F       LD    I  INTRT     GET FINAL RETURN         8B91BB70
     0824 0 D004           STO       INTR2     SAVE                     8B91BB80
     0825 0 7401 081F       MDX   L  INTRT,1   ADD 1 TO RETURN          8B91BB90
     0827 0 4C80 081F       BSC   I  INTRT     EXIT             SX      8B91B900
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0829 0 0000      INTR2 DC    0           DRIVE 0 FINAL RETURN    8B918910
082A 0 6500 0000 INTR  LDX L1 0          RESTORE IXING           8B918920
082C 0 6600 06E0       LDX L2 DST                                8B918930
082E 0 4C80 0829       BSC I  INTR2                              8B918940
.                                                                8B918950
 XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX                     8B918960
*XXXXXXXXXXXXXXXXX ROUTINE TO SET UP FOR   XXX                   8B918970
*XXXXXXXXXXXXXXXXX READ OR WRITE           XXX                   8B918980
*XXXXXXXXXXXXXXXXX ROUTINE CALL            XXX                   8B918990
*XXXXXXXXXXXXXXXXX BSI L PRDWT             XXX                   8B919000
*XXXXXXXXXXXXXXXXX ACCUM MUST # FUNCTION   XXX                   8B919010
*XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX                     8B919020
*                                                                8B919030
0830 0 0000      PRDWT DC    0                              SE   8B919040
0831 0 D209            STO    2 9         SET FUNC                8B919050
0832 0 C500 081D       LD  L1 DSWX1       GET MODIFIER            8B919060
0834 0 D20A            STO    2 10        SET IN DST              8B919070
0835 0 C400 0929       LD  L  MTTY4       GET WORD COUNT OF 5     8B919080
0837 0 D206            STO    2 6         SET WD CT               8B919090
0838 0 D400 0E9C       STO L  IOA         SET IN IO AREA          8B919100
083A 0 4C80 0830       BSC I  PRDWT                         SX   8B919110
*                                                                8B919120
*XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX                     8B919130
*XXXXXXXXXXXXXXXXX COMMON LOG ROUTINE      XXX                   8B919140
*XXXXXXXXXXXXXXXXX ROUTINE CALL            XXX                   8B919150
*XXXXXXXXXXXXXXXXX BSI L MLG               XXX                   8B919160
*XXXXXXXXXXXXXXXXX DC  MESSAGE ID          XXX                   8B919170
*XXXXXXXXXXXXXXXXX DC  LINE NO.-FORM NO.   XXX                   8B919180
*XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX                     8B919190
*                                                                8B919200
083C 0 0000      MLG   DC    0                                   8B919210
083D 0 4400 0306       BSI L  RDSWS       READ SWS               8B919220
083F 0 C400 02E1       LD  L  SW0         GET SWS                8B919230
0841 0 1802            SRA    2           CK FOR BYPASS          8B919240
0842 0 4C04 08C7       BSC L  MLG18,E     BRANCH # BYPASS        8B919250
0844 0 4400 0EC9       BSI L  LDSP        PRINT HEADING          8B919260
0846 0 6780 083C       LDX I3 MLG         IX # ADRS CALL         8B919270
0848 0 C300            LD     3 0         GET MSG ID             8B919280
0849 0 D400 08FB       STO L  MOD4        SET IN MSG             8B919290
084B 0 C301            LD     3 1         GET LINE AND FORM NO   8B919300
084C 0 D400 0901       STO L  MLGX0       SAVE                   8B919310
084E 0 6D00 08B8       STX L1 MLG05&1     SAVE IX 1              8B919320
0850 0 C400 02DF       LD  L  RID         GET RTN NO             8B919330
0852 0 D400 08FA       STO L  MOD3        SET IN MSG             8B919340
0854 0 6D00 08FC       STX L1 MOD5        SET DR NO IN MSG       8B919350
0856 0 C400 02DE       LD  L  PID         GET PROG NUMBER        8B919360
0858 0 D400 08F9       STO L  MOD2        SET IN MSG             8B919370
085A 0 C400 0901       LD  L  MLGX0       GET LINE/FORM NO       8B919380
085C 0 1008            SLA    8           SAVE FORM NO           8B919390
085D 0 1808            SRA    8                                  8B919400
085E 0 D001            STO    MLG00&1                            8B919410
085F 0 6700 0000 MLG00 LDX L3 0           IX 3 # FORM NUMBER     8B919420
0861 0 4F80 0863       BSC I3 MLG02       GO TO SET UP MSG       8B919430
0863 0 0869      MLG02 DC    FORM0        ADRS OF FORM 0 SETUP   8B919440
0864 0 08D1            DC    FORM1                       1        8B919450
0865 0 08D9            DC    FORM2                       2        8B919460
0866 0 08DF            DC    FORM3                       3        8B919470
0867 0 08E5            DC    FORM4                       4        8B919480
0868 0 08EB            DC    FORM5                       5        8B919490
*                                                                8B919500
*                 FORM IS 0                                      8B919510
*                                                                8B919520
0869 0 6300      FORM0 LDX   3 0                                 8B919530
*                                                                8B919540
*                 SET LINE NO AND WD CT                          8B919550
*                                                                8B919560
086A 0 C500 02EA MLG03 LD  L1 EDIT&6      GET DR MODEL           8B919570
086C 0 4820            BSC    Z           IS THIS MODEL 3        8B919580
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086D 0 701F            MDX    MLG11       NO                     8B919590
086E 0 6104            LDX   1 4                                 8B919600
086F 0 10A0      MLG10 SLT    32          CLEAR A AND Q          8B919610
0870 0 C500 08FC       LD  L1 MOD00-1     GET MSG WD             8B919620
0872 0 A400 06DC       M   L  MLGX7       CALCULATE TIME         8B919630
0874 0 AC00 0D84       D   L  MT7X0       SCALE BY 10            8B919640
0876 0 D500 08FC       STO L1 MOD00-1     SAVE THE TIME          8B919650
0878 0 71FF            MDX   1 -1         DECR IX 1              8B919660
0879 0 70F5            MDX    MLG10       LOOP                   8B919670
087A 0 C400 02DF       LD  L  RID         GET RTN NO             8B919680
087C 0 9400 0902       S   L  MLGX1       SUB 4                  8B919690
087E 0 4808            BSC    &           IS THIS RTN 5, 6, 7    8B919700
087F 0 702F            MDX    MLG07       NO-PRINT TIME          8B919710
0880 0 6104            LDX   1 4                                 8B919720
0881 0 10A0      MLG16 SLT    32          CLEAR A AND Q          8B919730
0882 0 C500 08FC       LD  L1 MOD00-1     GET TIME               8B919740
0884 0 A400 060F       M   L  INPSE       CALCULATE GAP          8B919750
0886 0 AC00 0907       D   L  MLGX9       SCALE BY 1000          8B919760
0888 0 D500 08FC       STO L1 MOD00-1     SAVE GAP               8B919770
088A 0 71FF            MDX   1 -1         DECR IX 1              8B919780
088B 0 70F5            MDX    MLG16       LOOP                   8B919790
088C 0 7022            MDX    MLG07       GO PRINT               8B919800
088D 0 6104      MLG11 LDX   1 4                                 8B919810
088E 0 10A0      MLG12 SLT    32          CLEAR A AND Q          8B919820
088F 0 C500 08FC       LD  L1 MOD00-1     GET MSG WD             8B919830
0891 0 18D0            RTE    16          SET IN Q               8B919840
0892 0 AC00 0D84       D   L  MT7X0       SCALE BY 10            8B919850
0894 0 18D0            RTE    16          SET IN Q               8B919860
0895 0 1090            SLT    16          CLEAR Q/SET Q IN A     8B919870
0896 0 A400 06DC       M   L  MLGX7       CALCULATE TIME         8B919880
0898 0 1010            SLA    16          CLEAR ACCUM            8B919890
0899 0 AC00 0D84       D   L  MT7X0       SCALE BY 10            8B919900
089B 0 D500 08FC       STO L1 MOD00-1     SAVE THE TIME          8B919910
089D 0 71FF            MDX   1 -1         DECR IX 1              8B919920
089E 0 70EF            MDX    MLG12       LOOP                   8B919930
089F 0 C400 02DF       LD  L  RID         GET RTN NO             8B919940
08A1 0 9060            S      MLGX1       SUB 4                  8B919950
08A2 0 4808            BSC    &           IS THIS RTN 5,6, OR7   8B919960
08A3 0 700B            MDX    MLG07       NO-PRINT TIME          8B919970
08A4 0 6104            LDX   1 4                                 8B919980
08A5 0 10A0      MLG15 SLT    32          CLEAR A AND Q          8B919990
08A6 0 C500 08FC       LD  L1 MOD00-1     GET TIME               8B920000
08A8 0 A400 060F       M   L  INPSE       CALCULATE GAP          8B920010
08AA 0 A85D            D      MLGX9&1     SCALE BY 100           8B920020
08AB 0 D500 08FC       STO L1 MOD00-1     SAVE GAP               8B920030
08AD 0 71FF            MDX   1 -1         DECR IX 1              8B920040
08AE 0 70F6            MDX    MLG15       LOOP                   8B920050
08AF 0 C051      MLG07 LD     MLGX0       GET LINE AND FORM NO   8B920060
08B0 0 1808            SRA    8           SAVE LINE NUMBER       8B920070
08B1 0 1008            SLA    8                                  8B920080
08B2 0 EF00 0902       OR  L3 MLGX1       INSERT WD CT           8B920090
08B4 0 D042            STO    MOD0        SET IN MSG             8B920100
*********************************************************        8B920110
08B5 0 4400 03BF MLG04 BSI L  LOGC        GO PRINT          *    8B920120
*********************************************************        8B920130
08B7 0 6500 0000 MLG05 LDX L1 0           RESTORE IX 1           8B920140
08B9 0 6600 06E0 MLG06 LDX L2 DST                                8B920150
08BB 0 7402 083C MLG0A MDX L  MLG,2                              8B920160
08BD 0 C400 036E       LD  L  ONE         GET 0001               8B920170
08BF 0 D038            STO    MOD1        RESTORE HEX/DEC SW     8B920180
08C0 0 C03A      CKERR LD     MOD4        GET MSG ID             8B920190
08C1 0 180C            SRA    12          SAVE MSG TYPE          8B920200
08C2 0 F00D            EOR    K000E       CK FOR E               8B920210
08C3 0 4818            BSC    &-          SKIP # NOT E           8B920220
08C4 0 7005            MDX    CKHLT       BRANCH                 8B920230
08C5 0 4C80 083C MLGE  BSC I  MLG         RETURN            SX   8B920240
08C7 0 7402 083C MLG18 MDX L  MLG,2       INCR RETURN       SX   8B920250
08C9 0 70F1            MDX    MLG0A       BRANCH                 8B920260
```

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08CA 0 C400 02E1   CKHLT LO   L  SWO        GET SWS              8B920270
08CC 0 1801              SRA     1                                8B920280
08CD 0 4404 03B2        BSI   L  HALT,E     BRANCH IF HLT ON ERR 8B920290
08CF 0 70F5             MOX       MLGE       CONTINUE             8B920300
08D0 0 000E      K000E OC        /000E                           8B920310
                 *                                               8B920320
                 *                  FORM IS ONE                  8B920330
                 *                                               8B920340
08D1 0 C201      FORM1 LO    2  1          GET MIN WRT TIME      8B920350
08D2 0 002A            STO       M0000      SET IN MSG           8B920360
08D3 0 C204            LO    2  4          GET ACTUAL WRT TIME   8B920370
08D4 0 0029            STO       M0001      SET IN MSG           8B920380
08D5 0 C200            LO    2  0          GET MAX WRT TIME      8B920390
08D6 0 0028      COM00 STO       M0002      SET IN MSG           8B920400
08D7 0 6303            LOX   3  3          SET IX FOR WO CT      8B920410
08D8 0 7091            MOX       MLG03      GO COMPLETE MSG       8B920420
                 *                                               8B920430
                 *                  FORM IS 2                    8B920440
                 *                                               8B920450
08D9 0 C207      FORM2 LO    2  7          GET OSW               8B920460
08DA 0 0022            STO       M0000      SET IN MSG           8B920470
08DB 0 1010            SLA      16          ZERO ACCUM           8B920480
08DC 0 001B            STO       M001       SET TO HEX           8B920490
08DD 0 6301      COM01 LOX   3  1          SET IX FOR WO CT      8B920500
08DE 0 7000            MOX       MLG07      GO COMPLETE MESSAGE  8B920510
                 *                                               8B920520
                 *                  FORM IS 3                    8B920530
                 *                                               8B920540
08DF 0 C203      FORM3 LO    2  3          GET MIN RO TIME       8B920550
08E0 0 001C            STO       M0000      SFT IN MSG           8B920560
08E1 0 C205            LO    2  5          GET ACTUAL RO TIME    8B920570
08E2 0 001B            STO       M0001      SET IN MSG           8B920580
08E3 0 C202            LO    2  2          GET MAX RO TIME       8B920590
08E4 0 70F1            MOX       COM00      GO COMPLETE MSG       8B920600
                 *                                               8B920610
                 *                  FORM IS 4                    8B920620
                 *                                               8B920630
08E5 0 C048      FORM4 LO        MTTYC      GET 10 MSEC GOT AVG  8B920640
08E6 0 0016            STO       M0000      SET IN MSG           8B920650
08E7 0 C048            LO        MTTYO      GET VAR GOT AVG      8B920660
08E8 0 0015            STO       M0001      SET IN MSG           8B920670
08E9 0 C048            LO        MTTYE      GET MIN GOT AVG      8B920680
08EA 0 70E8            MOX       COM00      GO COMPLETE MSG      8B920690
                 *                                               8B920700
                 *                  FORM IS 5                    8B920710
                 *                                               8B920720
08EB 0 C400 0089 FORM5 LO    L  MT7X5      GET AVERAGE CREEP    8B920730
08ED 0 0010            STO       M0001      SET IN MSG           8B920740
08EE 0 C400 0090       LO    L  MT7Y1      GET LOW VALUE        8B920750
08F0 0 000C            STO       M0000      SET IN MSG           8B920760
08F1 0 C400 0091       LO    L  MT7Y2      GET HIGH VALUE       8B920770
08F3 0 0008            STO       M0002      SET IN MSG           8B920780
08F4 0 6303            LOX   3  3          SET TO WORO COUNT     8B920790
08F5 0 4C00 086A       BSC   L  MLG03      GO COMPLETE MSG       8B920800
                 *                                               8B920810
                 *                  LOG MESSAGE STORAGE          8B920820
                 *                                               8B920830
08F7 0 0000      M000  OC        0          LINE NO/WORO CT      8B920840
08F8 0 0001      M001  OC        1          HEX/OEC              8B920850
08F9 0 0000      M002  OC        0          PROGRAM NUM8ER       8B920860
08FA 0 0000      M003  OC        0          ROUTINE NUMBER       8B920870
08FB 0 0000      M004  OC        0          MESSAGE IO           8B920880
08FC 0 0000      M005  OC        0          ORIVE NUMBER         8B920890
08FD 0 0000      M0000 OC        0          OATA WORO 0          8B920900
08FE 0 0000      M0001 OC        0            1                 8B920910
08FF 0 0000      M0002 OC        0            2                 8B920920
0900 0 0000      M0003 OC        0            3                 8B920930
                 *                                               8B920940
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                 *                  ROUTINE CONSTANTS           8B920950
                 *                                               8B920960
0901 0 0000      MLGX0 OC        0          LINE ANO FORM TEMP   8B920970
0902 0 0004      MLGX1 OC        4          WO CT # 4            8B920980
0903 0 0005      MLGX2 OC        5            5                 8B920990
0904 0 0006      MLGX3 OC        6            6                 8B921000
0905 0 0007      MLGX4 OC        7            7                 8B921010
0906 0 0002      MLGX8 OC        2                              8B921020
0907 0 03E8      MLGX9 OC        1000                           8B921030
0908 0 0064            OC        100                            8B921040
                 *                                               8B921050
*XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX               8B921060
*XXXXXXXXXXXXXXX SET AT LO PT CONSTANTS XXXX                     8B921070
*XXXXXXXXXXXXXXX ROUTINE CALL          XXXX                     8B921080
*XXXXXXXXXXXXXXX BSI  L  CN1           XXXX                     8B921090
*XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX               8B921100
                 *                                               8B921110
0909 0 0000      CN1   OC        0                         SE   8B921120
090A 0 C004            LO        RTN1X      GET AORS             8B921130
090B 0 000E            STO       STCN1&1    SET                  8B921140
090C 0 400A            BSI       STCN       SET OST         SRC  8B921150
090D 0 4C80 0909       8SC   I  CN1        EXIT            SX   8B921160
090F 0 066C      RTN1X OC        CON-1      OR 0 AORS            8B921170
                 *                                               8B921180
*XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX               8B921190
*XXXXXXXXXXXXXXX SET NOT AT LO PT CONSTANT X                     8B921200
*XXXXXXXXXXXXXXX ROUTINE CALL             X                     8B921210
*XXXXXXXXXXXXXXX 8SI  L  CN2             X                     8B921220
*XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX               8B921230
                 *                                               8B921240
0910 0 0000      CN2   OC        0                         SE   8B921250
0911 0 C004            LO        RTN2X      GET AORS             8B921260
0912 0 0007            STO       STCN1&1    SET                  8B921270
0913 0 4003            BSI       STCN       SET OST         SRC  8B921280
0914 0 4C80 0910       8SC   I  CN2        EXIT            SX   8B921290
0916 0 0670      RTN2X OC        CON1-1                          8B921300
                 *                                               8B921310
*XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX               8B921320
*XXXXXXXXXXXXXXX SET CONSTANTS XXXXXXXXXXXXX                     8B921330
*XXXXXXXXXXXXXXX ROUTINE CALL  XXXXXXXXXXXXX                     8B921340
*XXXXXXXXXXXXXXX BSI  L  STCN  XXXXXXXXXXXXX                     8B921350
*XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX               8B921360
                 *                                               8B921370
0917 0 0000      STCN  OC        0                         SE   8B921380
0918 0 6304            LOX   3  4          IX 3 # NUMBER WOS    8B921390
0919 0 C700 0000 STCN1 LO    L3 0          GET CONSTANT         8B921400
091B 0 0200            STO   2  0          SET IN OST           8B921410
091C 0 73FF            MOX   3 -1          OECR IX 3            8B921420
091D 0 7001            MOX       STCN2                          8B921430
091E 0 7002            MOX       STCN3      FINISHEO             8B921440
091F 0 7201      STCN2 MOX   2  1          INCR IX 2            8B921450
0920 0 70F8            MOX       STCN1      LOOP                 8B921460
0921 0 6600 06E0 STCN3 LOX   L2 OST        RESTORE IX 2         8B921470
0923 0 4C80 0917       BSC   I  STCN       EXIT            SX   8B921480
                 *                                               8B921490
*XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX               8B921500
*XXXXXXXXXXXXXXX COMMON CONSTANTS USEO BY XX                    8B921510
*XXXXXXXXXXXXXXX THE PROGRAM             XX                     8B921520
*XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX               8B921530
                 *                                               8B921540
0925 0 0001      MTTX1 OC        /0001                           8B921550
0926 0 0000      MTTX3 OC        0          TEMP                 8B921560
0927 0 FFFF      MTTX6 OC        /FFFF                           8B921570
0928 0 0500      MTTX9 OC        /0500      FUNCTION # WRT       8B921580
0929 0 400A      MTTY4 OC        /400A                           8B921590
092A 0 002F      MTTY5 OC        47          CONSTANT            8B921600
092B 0 2003      MTTY8 OC        /2003      OSW CK               8B921610
092C 0 0600      MTTY9 OC        /0600      FUNCTION # REAO      8B921620
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0920 0 0E6C      MTTYB OC      TOTA&3     AORS OF COUNTS          8B921630
092E   0000            BSS  E  0                                  8B921640
092E 0 0000      MTTYC OC      0          10 MSEC AVG             8B921650
092F 0 0000            OC      0                                  8B921660
0930 0 0000      MTTYO OC      0          VARIABLE AVG            8B921670
0931 0 0000            OC      0                                  8B921680
0932 0 0000      MTTYE DC      0          MIN AVG                 8B921690
0933 0 0000            OC      0                                  8B921700
0934 0 0000      MTTYA OC      0                                  8B921710
0935 0 0000            OC      0                                  8B921720
0936 0 4C00 0B2E MTTYF BSC  L  MT51E      PROG MOOIFIER           8B921730
0938 0 00EB      MTTZO OC      235        CONSTANT                8B921740
0939 0 9400 0C43 MTTZ1 S    L  MT5XE                              8B921750
093B 0 0000      PGSW  OC      0                                  8B921760
                 *                                                8B921770
                 *XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX       8B921780
                 *XXXXXXXXXXXXXXXX ROUTINE NUMBER ONE XXXXXXXX     8B921790
                 *XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX       8B921800
                 *                                                8B921810
093C 0 C0E8      MTT01 LO      MTTX1      GET 0001                8B921820
093D 0 D0E8            STO     MTTX3      SET RTN 1 SW            8B921830
093E 0 40CA            BSI     CN1        GO SET CONSTANTS   SRC  8B921840
                 *                                                8B921850
                 *                        PORTION COMMON TO RTNS 1-3  8B921860
                 *                        PREPARE TO WRITE        8B921870
                 *                                                8B921880
093F 0 C0E8      MT101 LO      MTTX9      GET WRT FNC             8B921890
0940 0 4400 0830       BSI  L  PROWT      GO SET UP          SRC  8B921900
                 *                                                8B921910
                 *                        OETERMINE RTN BEING RUN 8B921920
                 *                                                8B921930
0942 0 C0E3            LO      MTTX3      GET RTN 1 SW            8B921940
0943 0 4820            BSC     Z          IS THIS RTN 1           8B921950
0944 0 7005            MOX     MT102      YES-SKIP WRT            8B921960
                 *                                                8B921970
                 *                        ROUTINE 3 RUNNING       8B921980
                 *                                                8B921990
0945 0 4400 081F       BSI  L  INTRT      GO SET INTR RETURN SRC  8B922000
0947 0 07AA            OC      TMWR4                              8B922010
0948 0 4400 0780       BSI  L  TMWRT      WRITE                   8B922020
                 *                                                8B922030
                 *                        COMMON TO RTNS 1 ANO 3  8B922040
                 *                                                8B922050
                 *                                                8B922060
                 *                        TIME A WRITE            8B922070
                 *                                                8B922080
094A 0 4400 081F MT102 BSI  L  INTRT      GO SET RETURN      SRC  8B922090
094C 0 07AA            OC      TMWR4                              8B922100
094D 0 4400 0780       BSI  L  TMWRT      GO TIME A WRT      SRC  8B922110
                 *                                                8B922120
                 *                        CHECK THE TIMING        8B922130
                 *                                                8B922140
094F 0 C006            LO      MTTX3      GET RTN 1 SW            8B922150
0950 0 4820            BSC     Z          IS THIS RTN 1           8B922160
0951 0 7011            MOX     MT105      YES                     8B922170
0952 0 C400 07BC       LO   L  TWRXO      GET TIME                8B922180
0954 0 D204      MT108 STO  2  4          SAVE                    8B922190
0955 0 9200            S    2  0          SUB MAX TIME            8B922200
0956 0 4830            BSC     -Z         IS TIME TOO LONG        8B922210
0957 0 7010            MOX     MT104      YES                     8B922220
0958 0 C201            LO   2  1          GET MIN TIME            8B922230
0959 0 9204            S    2  4          SUB ACTUAL TIME         8B922240
095A 0 4830            BSC     -Z         IS TIME TOO SHORT       8B922250
095B 0 700C            MOX     MT104      YES                     8B922260
                 *                                                8B922270
                 *                        CHECK PRINT REQUEST SW  8B922280
                 *                                                8B922290
095C 0 C400 02E1       LO   L  SWO        GET SW FNC O            8B922300
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095E 0 1809            SRA     9                                  8B922310
095F 0 4804            BSC     E          IS DATA PRINT REQ.      8B922320
0960 0 700E            MDX     MT107      YES                     8B922330
                 *                                                8B922340
                 *                        ROUTINE IS COMPLETE     8B922350
                 *                                                8B922360
0961 0 4C00 0771 MT103 BSC  L  MONR1      EXIT                    8B922370
0963 0 C400 07BC MT105 LO   L  TWRXO                              8B922380
0965 0 9400 0679       S    L  MT1XO      SUB TURNAROUNO          8B922390
0967 0 70EC            MOX     MT108                              8B922400
                 *                                                8B922410
                 *                        ERROR FOUNO IN TIMING   8B922420
                 *                                                8B922430
0968 0 4400 083C MT104 BSI  L  MLG        PRINT ERROR             8B922440
096A 0 0F25            OC      MSG7&4                             8B922450
096B 0 0F11            OC      MSG3&8                             8B922460
096C 0 E005      E005  OC      /E005      IO E5                   8B922470
096D 0 0001            OC      /0001      LINE O-FORM 1           8B922480
096E 0 70F2            MOX     MT103                              8B922490
                 *                                                8B922500
                 *                        DATA PRINT IS REQUESTEO 8B922510
                 *                                                8B922520
096F 0 4400 083C MT107 BSI  L  MLG        PRINT OATA              8B922530
0971 0 0F25            OC      MSG7&4                             8B922540
0972 0 0F11            OC      MSG3&8                             8B922550
0973 0 A002      A002  OC      /A002      ID A2                   8B922560
0974 0 0001            OC      /0001      LINE O-FORM 1           8B922570
0975 0 70EB            MOX     MT103                              8B922580
                 *                                                8B922590
                 *XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX     8B922600
                 *XXXXXXXXXXXXXXXX ROUTINE NUMBER TWO XXXXXXXX     8B922610
                 *XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX     8B922620
                 *                                                8B922630
0976 0 C0AE      MTT02 LO      MTTX1      GET 0001                8B922640
0977 0 D0AE            STO     MTTX3      SET RTN 2 SW            8B922650
0978 0 4400 0909       BSI  L  CN1        GO SET CONSTANTS   SRC  8B922660
                 *                                                8B922670
                 *                        COMMON TO RTNS 2 ANO 4  8B922680
                 *                                                8B922690
097A 0 C0A0      MT200 LO      MTTX9      GET WRT FNC             8B922700
097B 0 4400 0830       BSI  L  PROWT      GO SET UP          SRC  8B922710
097D 0 4400 081F       BSI  L  INTRT      SET INTRPT RETURN  SRC  8B922720
097F 0 07AA            OC      TMWR4                              8B922730
0980 0 4400 0780       BSI  L  TMWRT      WRITE                   8B922740
                 *                                                8B922750
                 *                        DETERMINE RTN BEING RUN 8B922760
                 *                                                8B922770
0982 0 C0A3            LO      MTTX3      GET RTN 2 SW            8B922780
0983 0 4820            BSC     Z          IS THIS RTN 2           8B922790
0984 0 702C            MOX     MT203      YES                     8B922800
                 *                                                8B922810
                 *                        THIS IS RTN 4           8B922820
                 *                                                8B922830
0985 0 4400 0780       BSI  L  TMWRT      WRITE                   8B922840
                 *                                                8B922850
                 *                        WRITE IS COMPLETE       8B922860
                 *                                                8B922870
0987 0 4400 07F0       BSI  L  RWO        GO REWINO          SRC  8B922880
0989 0 C0A2      MT208 LO      MTTY9      GET READ FNCT           8B922890
098A 0 4400 0830       BSI  L  PROWT      GO SET UP          SRC  8B922900
098C 0 4400 081F       8SI  L  INTRT      GO SET TIME INT RET SRC 8B922910
098E 0 07C4            OC      TMRO4                              8B922920
098F 0 C400 0926       LO   L  MTTX3      GET RTN 2 SW            8B922930
0991 0 4820            BSC     Z          IS THIS RTN 2           8B922940
0992 0 7002            MOX     MT209      YES                     8B922950
0993 0 4400 07C0       BSI  L  TMROT      GO REAO            SRC  8B922960
0995 0 4400 07C0 MT209 BSI  L  TMROT      GO REAO            SRC  8B922970
                 *                                                8B922980
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                    *                REAO IS COMPLETE                88922990
                    *                                                88923000
0997 0 C400 0926    LO    L  MTTX3   GET RTN 2 SW                    88923010
0999 0 4820         BSC      Z       IS THIS RTN 2                   88923020
099A 0 7011         MOX      MT201   YES                             88923030
099B 0 C400 07BC    LO    L  TWRXO   GET TIME                        88923040
0990 0 0205  MT202  STO      2 5     SAVE                            88923050
099E 0 9202         S        2 2     SUB MAX TIME                    88923060
099F 0 4830         BSC      -Z      IS TIME TOO LONG                88923070
09A0 0 7013         MOX      MT204   YES                             88923080
09A1 0 C203         LO       2 3     GET MIN TIME                    88923090
09A2 0 9205         S        2 5     SUB ACTUAL                      88923100
09A3 0 4830         BSC      -Z      IS TIME TOO SHORT               88923110
09A4 0 700F         MOX      MT204   YES                             88923120
                    *                                                88923130
                    *                CHECK PRINT REQ SW              88923140
                    *                                                88923150
09A5 0 C400 02E1    LO    L  SWO     GET SW FNC O                    88923160
09A7 0 1809         SRA      9                                       88923170
09A8 0 4804         BSC      E       IS SW SET                       88923180
09A9 0 7011         MOX      MT205   YES                             88923190
                    *                                                88923200
                    *                PRINT NOT REQUESTEO             88923210
                    *                                                88923220
09AA 0 4C00 0771 MT206 BSC L  MONR1   EXIT                           88923230
09AC 0 C400 07BC MT201 LO  L  TWRXO   GET TIME                       88923240
09AE 0 9400 0679    S     L  MT1XO                                   88923250
09B0 0 70EC         MOX      MT202                                   88923260
                    *                                                88923270
                    *                THIS IS RTN 2                   88923280
                    *                                                88923290
09B1 0 4400 07F0 MT203 BSI L  RWO     REWINO ORIVE         SRC       88923300
09B3 0 7005         MOX      MT208                                   88923310
                    *                                                88923320
                    *                TIMING ERROR                    88923330
                    *                                                88923340
09B4 0 4400 083C MT204 BSI L  MLG     PRINT ERROR                    88923350
09B6 0 0F29         DC       MSG8&4                                  88923360
09B7 0 0F11         OC       MSG3&8                                  88923370
09B8 0 E006  E006   OC       /E006   IO E6                           88923380
09B9 0 0003         OC       /0003   LINE O-FORM 3                   88923390
09BA 0 70EF         MOX      MT206                                   88923400
                    *                                                88923410
                    *                PRINT REQUEST SW IS ON          88923420
                    *                                                88923430
09BB 0 4400 083C MT205 BSI L  MLG     PRINT OATA                     88923440
09BD 0 0F29         OC       MSG8&4                                  88923450
09BE 0 0F11         OC       MSG3&8                                  88923460
09BF 0 A003  A003   OC       /A003   IO A3                           88923470
09C0 0 0003         OC       /0003   LINE O-FORM 3                   88923480
09C1 0 70E8         MOX      MT206                                   88923490
                    *                                                88923500
*XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX                      88923510
*XXXXXXXXXXXXXXX ROUTINE NUMBER THREE XXXXXX                         88923520
*XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX                      88923530
                    *                                                88923540
09C2 0 1010   MTT03 SLA     16      ZERO ACCUM            SE         88923550
09C3 0 0400 0926    STO   L  MTTX3  CLEAR RTN 1 SW                   88923560
09C5 0 4400 0910    BSI   L  CN2    GO SET CONSTANTS      SRC        88923570
09C7 0 4C00 093F    BSC   L  MT101  GO TO COMMON RTN                 88923580
                    *                                                88923590
*XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX                      88923600
*XXXXXXXXXXXXXXXXX ROUTINE NUMBER FOUR XXXXXX                        88923610
*XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX                      88923620
                    *                                                88923630
09C9 0 1010   MTT04 SLA     16      ZERO ACCUM            SE         88923640
09CA 0 0400 0926    STO   L  MTTX3  CLEAR RTN 2 SW                   88923650
09CC 0 4400 0910    BSI   L  CN2    GO SET CONSTANTS      SRC        88923660
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09CE 0 70AB         MDX      MT200   GO TO COMMON RTN                88923670
                    *                                                88923680
*XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX                      88923690
*XXXXXXXXXXXXXXX ROUTINE NUMBER FIVE XXXXXXX                         88923700
*XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX                      88923710
                    *                                                88923720
                    *                                                88923730
                    *                SET UP FOR WRITE                88923740
                    *                                                88923750
09CF 0 1010   MTT05 SLA     16      ZERO ACCUM                       88923760
0900 0 0400 0926    STO   L  MTTX3                                   88923770
0902 0 18D0         RTE      16      CLEAR Q REG                     88923780
0903 0 1010         SLA      16      CLEAR ACCUM                     88923790
0904 0 0C00 092E    STO   L  MTTYC   CLEAR ALL TOTALS                88923800
09D6 0 DC00 0930    STO   L  MTTYO                                   88923810
0908 0 0C00 0932    STO   L  MTTYE                                   88923820
090A 0 0400 0B6B    STO   L  GRL1&1                                  88923830
090C 0 0400 0B7A    STO   L  MT526&1                                 88923840
090E 0 0400 0B9E    STO   L  LNSW                                    88923850
09E0 0 6301         LOX      3 -47                                   88923860
09E1 0 D700 0E9B MT573 STO L3 TOTA&50                                88923870
09E3 0 7301         MOX      3 1     OECR IX 3                       88923880
09E4 0 70FC         MOX      MT573   LOOP                            88923890
09E5 0 C400 0020    LO    L  MT730   RESTORE RTN CONSTANT            88923900
09E7 0 0400 089F    STO   L  PRSW                                    88923910
09E9 0 CC00 0606    LOO   L  MT506-1                                 88923920
09E8 0 CC00 0C36    STO   L  OLYC                                    88923930
09ED 0 C400 0C38    LO    L  AORS1                                   88923940
09EF 0 0040         STO      MT50A&1                                 88923950
09F0 0 C400 0C3A    LO    L  K0086                                   88923960
09F2 0 003B         STO      MT509&1                                 88923970
09F3 0 CC00 0C30    LOO   L  MT5Q6                                   88923980
09F5 0 0826         STO      MT5Q7                                   88923990
09F6 0 C400 0C30    LO    L  MT5X3                                   88924000
09F8 0 0400 0462    STO   L  SW                                      88924010
09FA 0 1010         SLA      16                                      88924020
09FB 0 0400 0C42    STO   L  LINE                                    88924030
09F0 0 0400 0926    STO   L  MTTX3                                   88924040
09FF 0 0400 0C3E    STO   L  MT5X4                                   88924050
0A01 0 C400 0939    LD    L  MTTZ1                                   88924060
0A03 0 0400 0B27    STO   L  MT51D                                   88924070
0A05 0 C400 093A    LO    L  MTTZ1&1                                 88924080
0A07 0 0400 0B28    STO   L  MT510&1                                 88924090
0A09 0 C400 0928    LO    L  MTTX9                                   88924100
0A0B 0 4400 0830    BSI   L  PROWT   GO SET UP            SRC        88924110
0A00 0 4400 081F    BSI   L  INTRT   GO SET TIME INT RET  SRC        88924120
0A0F 0 07AA         OC       TMWR4                                   88924130
                    *                                                88924140
                    *                WRITE FIRST RECORO              88924150
                    *                                                88924160
0A10 0 4400 0780 MT502 BSI L  TMWRT   WRITE                          88924170
                    *                                                88924180
                    *                OELAY 10 MILLISEC               88924190
                    *                                                88924200
0A12 0 C400 06A5    LO    L  MT540   GET OELAY CT                    88924210
0A14 0 0400 0C33    STO   L  OLY1    SET                             88924220
*************************************************                    88924230
0A16 0 4400 038C    BSI   L  OELAY   GO OELAY             *          88924240
0A18 0 0C32         OC       OLY1-1  AORS OF COUNT        *          88924250
*************************************************                    88924260
                    *                                                88924270
                    *                WRITE SECONO RECORO             88924280
                    *                                                88924290
0A19 0 4400 0780 MT503 BSI L  TMWRT   WRITE                          88924300
0A1B 0 7000         MOX      MT5Q7   BRANCH                          88924310
                    *                                                88924320
                    *                VARIABLE OELAY .5 MILLISEC      88924330
                    *                TO 5 SECS.                      88924340
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              *                                                    8B924350
0A1C  0000          BSS   E  0                                     8B924360
0A1C 0 1000   MT5Q7 NOP      0         REPLACED BY BRANCH          8B924370
0A1D 0 1000         NOP      0         *DURING LFT COL TST         8B924380
0A1E 0 4400 078D    BSI   L  TMWRT     WRITE 3RD RECORD            8B924390
0A20 0 CC00 0C36    LDD   L  DLYC      GET DELAY COUNT             8B924400
0A22 0 DC00 0C34    STD   L  DLY2-1    SET                         8B924410
              ****************************************             8B924420
0A24 0 4400 038C   MT505 BSI L  DELAY      GD DELAY          *     8B924430
0A26 0 0C34         DC       DLY2-1    ADRS OF COUNT          +     8B924440
              ****************************************             8B924450
0A27 0 6600 06E0   MT508 LDX L2 OST                                8B924460
              *                                                    8B924470
              *                        WRITE FOURTH RECORD         8B924480
              *                                                    8B924490
0A29 D 4400 0780    BSI   L  TMWRT     WRITE                       8B924500
              *                                                    8B924510
              *                        WRITE FIFTH RECORD          8B924520
              *                                                    8B924530
0A2B 0 4400 078D    BSI   L  TMWRT     WRITE                       8B924540
              *                                                    8B924550
              *                        PREPARE FOR NEXT SERIES     8B924560
              *                                                    8B924570
0A2D 0 6700 0056   MT509 LDX L3 86     SET IXING                   8B924580
0A2F 0 CF00 067E   MT50A LDD L3 MT5X0&4 GET NEXT DELAY             8B924590
0A31 0 DC00 0C36    STD   L  DLYC      SET                         8B924600
0A33 0 74FE 0A2E    MDX   L  MT509&1,-2 DECR IX                    8B924610
0A35 0 70DA         MDX      MT502     GO WRITE NEXT SERIES        8B924620
              *                                                    8B924630
0A36 0 C400 0C3A    LD    L  K0086     RESTORE ROUTINE             8B924640
0A38 0 D0F5         STO      MT509&1   *                           8B924650
0A39 0 C400 0C38    LD    L  ADRS1     *                           8B924660
0A3B 0 D0F4         STO      MT50A&1   *                           8B924670
0A3C 0 CC00 0606    LDD   L  MT506-1   *                           8B924680
0A3E 0 DC00 0C36    STO   L  DLYC      *                           8B924690
              *                                                    8B924700
0A40 0 74FF 0462    MDX   L  SW,-1     CK FOR SERIES COMPLT        8B924710
0A42 0 7014         MDX      MT590     SET FOR LOAD LFT COL        8B924720
0A43 0 C400 0C3D    LD    L  MT5X3     GET 2                       8B924730
0A45 0 0400 0462    STO   L  SW        SET IN SW                   8B924740
0A47 0 CC00 0C30    LDD   L  MT5Q6     RESTORE PROGRAM             8B924750
0A49 0 08D2         STD      MT5Q7     *                           8B924760
0A4A 0 7401 0926    MDX   L  MTTX3,1   CK FOR 5 PASSES             8B924770
0A4C 0 C400 0926    LD    L  MTTX3     *                           8B924780
0A4E 0 9400 0C45    S     L  MT5XF     *                           8B924790
0A50 0 4820         BSC      Z         SKIP IF FINISHED            8B924800
0A51 0 70BE         MDX      MT502     GO WRT NEW PASS             8B924810
0A52 0 0400 0926    STO   L  MTTX3     CLEAR PASS COUNT            8B924820
0A54 0 4400 07F0    BSI   L  RWD       REWIND                      8B924830
0A56 0 700A         MDX      MT583     GO READ                     8B924840
              *                                                    8B924850
0A57 0 C400 0C3B   MT590 LD L  K0010   SET IX FOR FINAL DLY        8B924860
0A59 0 0004         STD      MT509&1   * 4 DELAYS                  8B924870
0A5A 0 C400 0C39    LD    L  ADRS2     GET LOAD ADRS               8B924880
0A5C 0 D003         STO      MT50A&1   SET                         8B924890
0A5D 0 CC00 0C2E    LDD   L  KBSC      SET BRANCH TO LOAD          8B924900
0A5F 0 08BC         STD      MT5Q7     * LEFT COLUMN               8B924910
0A60 0 70CC         MDX      MT509     GO FINISH SERIES            8B924920
              *                                                    8B924930
              *                        SET UP TO READ              8B924940
              *                                                    8B924950
0A61 0 C400 092C   MT583 LD L  MTTY9   GET FNC READ                8B924960
0A63 0 4400 0830    BSI   L  PRDWT     GO SET UP                   8B924970
0A65 0 4400 081F    BSI   L  INTRT     GO SET TIME INT RET  SRC    8B924980
0A67 0 07C4         DC       TMRO4                                 8B924990
0A68 0 4400 0910   MT500 BSI L  CN2    GO SET CONSTANTS     SRC    8B925000
              *                                                    8B925010
              *                        READ FIRST RECORD           8B925020
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              *                                                    8B925030
0A6A 0 4400 07C0    BSI   L  TMRDT     GO READ             SRC     8B925040
              *                                                    8B925050
              *                        READ SECOND RECORD          8B925060
              *                                                    8B925070
0A6C 0 4400 07C0    BSI   L  TMRDT     GO READ             SRC     8B925080
0A6E 0 C400 07BC    LD    L  TWRXO     GET THE TIME                8B925090
0A70 0 D400 0E69    STO   L  TDTA      SAVE                        8B925100
0A72 0 4400 07C0    BSI   L  TMRDT     READ 3RD RECORD             8B925110
0A74 0 4400 07C0    BSI   L  TMRDT     READ 4TH RECORD             8B925120
0A76 0 C400 07BC    LD    L  TWRXO     GET THE TIME                8B925130
0A78 0 D400 0E6A    STO   L  TOTA&1    SAVE                        8B925140
              *                                                    8B925150
              *                        READ FIFTH RECORD           8B925160
              *                                                    8B925170
0A7A 0 4400 07C0    BSI   L  TMRDT     GO READ             SRC     8B925180
0A7C 0 C400 07BC    LD    L  TWRXO     GET THE TIME                8B925190
0A7E 0 D400 0E6B    STO   L  TDTA&2    SAVE                        8B925200
0A80 0 C400 0E69    LD    L  TOTA      GET 10 MSEC GDT             8B925210
0A82 0 1890         SRT      16                                    8B925220
0A83 0 8C00 092E    AD    L  MTTYC     ADD TDTAL                   8B925230
0A85 0 DC00 092E    STD   L  MTTYC     SAVE                        8B925240
0A87 0 C400 0E6A    LD    L  TOTA&1    GET VAR GDT CT              8B925250
0A89 0 1890         SRT      16                                    8B925260
0A8A 0 8C00 0930    AD    L  MTTYO     ADD TO TDTAL                8B925270
0A8C 0 DC00 0930    STD   L  MTTYO     SAVE                        8B925280
0A8E 0 6700 0E6C   MT50F LDX L3 TOTA&3 IX 3 # AORS TOTALS          8B925290
0A90 0 C400 0E6A    LD    L  TOTA&1    GET A COUNT                 8B925300
0A92 0 8300         A     3 0         ADD TO TOTAL                8B925310
0A93 0 D300         STO      3 0       SAVE                        8B925320
0A94 0 7301         MDX      3 1       STEP IX 3                   8B925330
0A95 0 6BF9         STX      3 MT50F&1 SAVE IX 3                   8B925340
0A96 0 C400 0E6B    LD    L  TOTA&2    GET MIN GDT COUNT           8B925350
0A98 0 1890         SRT      16                                    8B925360
0A99 0 8C00 0932    AD    L  MTTYE     ADD TO TOTAL                8B925370
0A9B 0 DC00 0932    STD   L  MTTYE     SAVE                        8B925380
0A9D 0 7401 0C3E    MDX   L  MT5X4,1   ADD 1 TO SERIES CT          8B925390
0A9F 0 C400 0C3E    LD    L  MT5X4     GET SERIES CT               8B925400
0AA1 0 9400 092A    S     L  MTTY5     SUB 81                      8B925410
0AA3 0 4820         BSC      Z         IS A SERIES COMPLETE        8B925420
0AA4 0 70C3         MDX      MT500     NO                          8B925430
0AA5 0 D400 0C3E    STO   L  MT5X4     CLEAR SERIES CTR            8B925440
0AA7 0 C400 0920    LD    L  MTTYB                                 8B925450
0AA9 0 D0E5         STD      MT50F&1   RESTORE LDX                 8B925460
0AAA 0 7401 0926    MDX   L  MTTX3,1   ADD 1 TO PASS CT            8B925470
0AAC 0 C400 0926    LD    L  MTTX3     GET PASS CT                 8B925480
0AAE 0 9400 0C45    S     L  MT5XF     SUB 5                       8B925490
0AB0 0 4820         BSC      Z         IS THIS FIVE PASSES         8B925500
0AB1 0 70B6         MDX      MT500     NO                          8B925510
0AB2 0 D400 0926    STO   L  MTTX3     CLEAR PASS CT               8B925520
              *                                                    8B925530
              *                        5 PASSES COMPLETE-- OUTPUT  8B925540
              *                        A PLOT OF VAR DELAYS        8B925550
              *                                                    8B925560
0AB4 0 6306         LDX      3 6                                   8B925570
0AB5 0 CF00 092C   MT524 LDD L3 MTTYC-2 GET A COUNT                8B925580
0AB7 0 AC00 0938    D     L  MTTZO     AVG IT                      8B925590
0AB9 0 D700 092C    STO   L3 MTTYC-2   SAVE                        8B925600
0ABB 0 73FE         MDX      3 -2      ARE ALL AVCED               8B925610
0ABC 0 70F8         MDX      MT524     NO-LOOP                     8B925620
0ABD 0 C400 02E1    LD    L  SWD       GET SW FNC 0                8B925630
0ABF 0 1808         SRA      8                                     8B925640
0AC0 0 4804         BSC      E         IS BYPASS GRAPH ON          8B925650
0AC1 0 7001         MDX      MT580     YES                         8B925660
0AC2 0 7002         MDX      MT525-2   NO                          8B925670
0AC3 0 4C00 0BC5   MT580 BSC L  MT521                              8B925680
0AC5 0 6700 FF01    LDX      L3 -47                                8B925690
0AC7 0 C700 0E9B   MT525 LD L3 TOTA&50 GET VAR TOTAL               8B925700
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2400 TIMING TEST

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OAC9 0 1890        SRT    16                        88925710
OACA 0 AC00 0C45   O   L  MT5XF     AVG IT          88925720
OACC 0 0700 0E9B   STO L3 TOTA&50   SAVE            88925730
OACE 0 7301        MOX    3 1                        88925740
OACF 0 70F7        MOX    MT525     ND-LOOP         88925750
OAD0 0 6000 0BC4   STX L1 MT520&1   SAVE IX 1        88925760
OAD2 0 1010        SLA    16        PRINT BLANK LINE 88925770
OAD3 0 4400 0C19   BSI L  LOADK     *                88925780
OAD5 0 4400 044C   BSI L  PCCO      *                88925790
OAD7 0 6700 00B1   LOX L3 PR3-1     IX # MSG AORS   88925800
OAD9 0 4400 0C21   BSI L  LOAOV     SET MSG - PRINT  88925810
OADB 0 6204        LOX    2 -44                       88925820
OADC 0 6580 06EF   LOX I1 OST&15    IX 1 # NO TRACKS 88925830
OADE 0 C500 0675   LO  L1 MT5XA     SET LINE LIMITS  88925840
OAE0 0 0400 0C43   STO L  MT5XE                       88925850
OAE2 0 C500 0677   LD  L1 MT5XA&2                      88925860
OAE4 0 0400 0C44   STO L  MT5XE&1                      88925870
OAE6 0 C400 0C43 MT516 LO L MT5XE                      88925880
OAE8 0 9400 060B   S   L  GPHLM     SET TO NEXT LINE  88925890
OAEA 0 D400 0C43   STO L  MT5XE                       88925900
OAEC 0 C400 0C44   LO  L  MT5XE&1                      88925910
OAEE 0 9400 060B   S   L  GPHLM     SET TO NEXT LINE  88925920
OAF0 0 0400 0C44   STO L  MT5XE&1                      88925930
OAF2 0 7401 0C42   MDX L  LINE,1    INCR LINE COUNT  88925940
OAF4 0 C400 06EF   LO  L  OST&15    GET NO TRACKS    88925950
OAF6 0 4C18 0B04   BSC L  TRK9,&-   BCH IF 9 TRK     88925960
OAF8 0 C400 0C42   LO  L  LINE      GET LINE COUNT   88925970
OAFA 0 9400 0461   S   L  PCCX1     SUB 9            88925980
OAFC 0 4C18 0B0B   BSC L  MT517,&-  BCH IF 9         88925990
OAFE 0 9400 0C3C NTOSH S L MT5X2    SUB 30           88926000
OB00 0 4C18 0B0B   BSC L  MT517,&-  BCH IF 39        88926010
OB02 0 1010        SLA    16        CLEAR ACC        88926020
OB03 0 7009        MOX    MT517&2   BRANCH           88926030
OB04 0 C400 0C42 TRK9 LD L LINE     GET LINE COUNT   88926040
OB06 0 9400 0463   S   L  K007      SUB 7            88926050
OB08 0 4C1B 0B0B   BSC L  MT517,&-  BCH IF 7         88926060
OB0A 0 70F3        MOX    NTOSH                        88926070
OB0B 0 C400 0C41 MT517 LO L KOASH   GET DASH         88926080
OB0D 0 4400 0C19   BSI L  LOAOK     SET I/O AREA     88926090
OB0F 0 1010        SLA    16        CLEAR ACC        88926100
OB10 0 D400 0093   STO L  PRA3      *                88926110
OB12 0 0400 0094   STO L  PRA1      *                88926120
OB14 0 C400 0C41   LD  L  KOASH     SET FINAL DASH   88926130
OB16 0 1008        SLA    8                          88926140
OB17 0 0400 00B0   STO L  PRA&26                      88926150
OB19 0 C400 036E   LO  L  ONE       GET ONE          88926160
OB1B 0 D400 0BA0   STO L  CKHLW     SET SW # OOD     88926170
OB1D 0 C400 066C   LD  L  SPEC      GET *            88926180
OB1F 0 D400 0095   STO L  PRA4&3    SET IN I/D       88926190
OB21 0 63E5        LDX    3 -27     IX # MSG         88926200
OB22 0 6101        LDX    1 -47                       88926210
OB23 0 C500 0E9B MT519 LO L1 TOTA&50 GET A COUNT     88926220
OB25 0 4C18 0B59   BSC L  MT51B,&-  IS IT ZERO       88926230
OB27 0 9400 0C43 MT51D S L MT5XE    SUB GRAPH LIMIT  88926240
OB29 0 4C28 0B3C   BSC L  MT51A,&Z  IS COUNT LESS    88926250
OB2B 0 1010        SLA    16        ZERO ACCUM       88926260
OB2C 0 0500 0E9B   STO L1 TOTA&50   ZERO THE COUNT   88926270
OB2E 0 C071      MT51E LO   CKHLW    GET HALF WD SW  88926280
OB2F 0 4804        BSC    E         IS THIS FIRST HALF 88926290
OB30 0 7008        MOX    MT51F     YES              88926300
OB31 0 C400 0C3F   LO  L  MT5X8     GET AN E         88926310
OB33 0 1B0B        SRA    8         SET TO SECOND HALF 88926320
OB34 0 EF00 00B1   OR  L3 PRA&27    SET IN MSG       88926330
OB36 0 0700 00B1 MTAAA STO L3 PRA&27 *               88926340
OB38 0 7020        MOX    MT51B                        88926350
OB39 0 C400 0C3F MT51F LO L MT5X8   GET AN E         88926360
OB3B 0 70F8        MOX    MTAAA-2                       88926370
                 *                                     88926380
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2400 TIMING TEST

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OB3C 0 C500 0E9B MT51A LO L1 TOTA&50 GET A COUNT     88926390
OB3E 0 9400 0C43   S   L  MT5XE                        88926400
OB40 0 4830        BSC    -Z        IS COUNT LESS/EQUAL 88926410
OB41 0 7017        MDX    MT51B     NO               88926420
OB42 0 C500 0E9B   LO  L1 TOTA&50   GET A COUNT      88926430
OB44 0 9400 0C44   S   L  MT5XE&1                      88926440
OB46 0 4B28        BSC    &Z        IS COUNT FOR THIS LN 88926450
OB47 0 7011        MDX    MT51B     NO               88926460
OB48 0 C057        LD     CKHLW     GET HALF WO SW   88926470
OB49 0 4804        BSC    E         IS THIS FIRST HALF 88926480
OB4A 0 7008        MDX    MTAAB     YES              88926490
OB4B 0 C400 0C40   LO  L  MT5X9     GET A ZERO       88926500
OB4D 0 1808        SRA    8                          88926510
OB4E 0 EF00 00B1   OR  L3 PRA&27    SET IN MSG       88926520
OB50 0 0700 0DB1 MTAAC STO L3 PRA&27                  88926530
OB52 0 7003        MOX    MTAAD                        88926540
OB53 0 C400 0C40 MTAAB LO L MT5X9   GET A ZERO       88926550
OB55 0 70F8        MOX    MTAAC-2                       88926560
OB56 0 1010      MTAAO SLA  16      ZERO ACCUM       88926570
OB57 0 0500 0E9B   STO L1 TOTA&50   ZERO THE COUNT   88926580
OB59 0 7401 0BA0 MT51B MDX L CKHLW,1 INCR HALF WO SW 88926590
OB5B 0 C044        LD     CKHLW     GET HALF WO SW   88926600
OB5C 0 4804        BSC    E         IS IT EVEN       88926610
OB5D 0 7301        MOX    3 1       NO-OECR IX 3     88926620
OB5E 0 1000        NOP                                 88926630
OB5F 0 7101        MOX    1 1       OECR IX 1        88926640
OB60 0 70C2        MOX    MT519     LOOP             88926650
                 *                                     88926660
                 *                                     88926670
                 *               A LINE IS SET UP-PRINT 88926680
                 *                                     88926690
OB61 0 7401 0B9E   MDX L  LNSW,1    AOO ONE TO LINE SW 88926690
OB63 0 6A25        STX    2 MT51C&1                     88926700
OB64 0 C039        LO     LNSW      GET LINE SW      88926710
OB65 0 9039        S      PRSW      SUB PRINT SW     88926720
OB66 0 4B20        BSC    Z         ARE THEY EQUAL   88926730
OB67 0 7011        MOX    MT526     NO               88926740
OB68 0 740A 0B9F   MOX L  PRSW,10   AOO TEN TO PRINT SW 88926750
OB6A 0 6600 0000 GRL1 LOX L2 0      IX 2 # CHARACTER 88926760
OB6C 0 C400 06EF   LO  L  DST&15    GET NO TRACKS    88926770
OB6E 0 4820        BSC    Z         IS THIS 9 TRACK  88926780
OB6F 0 7003        MOX    MT518     NO               88926790
OB70 0 C600 0BA1 MT572 LO L2 PR6    GET 9 TRACK CHAR 88926B00
OB72 0 7002        MOX    MT50B                        88926B10
OB73 0 C600 0BA5 MT518 LO L2 PR7    GET 7 TRACK CHAR 88926820
OB75 0 0400 0094 MT50B STO L PRA1   SET IN MSG       88926830
OB77 0 7401 0B6B   MDX L  GRL1&1,1  SELECT NEXT CHAR 88926840
OB79 0 6600 0000 MT526 LDX L2 0     IX I # CHARACTER 88926850
OB7B 0 C600 0E06   LO  L2 PR8       GET CHARACTER    88926860
OB7D 0 0400 0093   STO L  PRA3      SET IN MSG       88926870
OB7F 0 7401 0B7A   MDX L  MT526&1,1 INCR IX 2        88926880
*****************************************            88926890
OB81 0 4400 044C   BSI L  PCCO      GO PRINT      *  88926900
*****************************************            88926910 •
OB83 0 1010      MT50C SLA  16                        88926920
OB84 0 0400 0093   STO L  PRA3      RESTORE          88926930
OB86 0 0400 0094   STO L  PRA1      SET IN MSG       88926940
OB88 0 6600 0000 MT51C LOX L2 0     RESTORE IX 2     88926950
OB8A 0 7201        MOX    2 1       ARE ALL LINES OONE 88926960
OB8B 0 7010        MOX    MT584     LOOP             88926970
OB8C 0 C400 0926   LO  L  MTTX3     GET LAST LINE SW 88926980
OB8E 0 F400 0925   EOR L  MTTX1     EOR WITH 0001    88926990
OB90 0 0400 0926   STO L  MTTX3     SAVE             88927000
OB92 0 4C18 0BA9   BSC L  MT562,&-  BRANCH IF OONE   88927010
OB94 0 C400 0936   LO  L  MTTYF     NO               88927020
OB96 0 0090        STO    MT510     MOOIFY PROG      88927030
OB97 0 C400 0937   LO  L  MTTYF&1                      88927040
OB99 0 008E        STO    MT510&1   MOOIFY PROG      88927050
OB9A 0 6600 FFFF   LOX L2 -1        IX 2 # FFFF      88927060
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0B9C 0 4C00 0AE6  MT584 BSC  L  MT516      LOOP                8B927070
0B9E 0 0000       LNSW  DC     0                               8B927080
0B9F 0 0007       PRSW  DC     7                               8B927090
0BA0 0 0000       CKHLW DC     0            HALF WD SW          8B927100
0BA1 0 3B08       PR6   DC     /3B08        PRINTER .8          8B927110
0BA2 0 3B07             DC     /3B07        PRINTER .7          8B927120
0BA3 0 3B06             DC     /3B06        PRINTER .6          8B927130
0BA4 0 3B05             DC     /3B05        PRINTER .5          8B927140
                  *                                            8B927150
0BA5 0 013B       PR7   DC     /013B        PRINTER 1.          8B927160
0BA6 0 3B09             DC     /3B09        PRINTER .9          8B927170
0BA7 0 3B08             DC     /3B08        PRINTER .8          8B927180
0BA8 0 3B07             DC     /3B07        PRINTER .7          8B927190
                  *                                            8B927200
                  *              GRAPH COMPLETE-PRINT AVGS      8B927210
                  *                                            8B927220
                  *                                            8B927230
                  ************************************          8B927240
0BA9 0 6700 0DB1  MT562 LDX  L3 PR3-1       LOAD MSG ADRS       8B927250
0BAB 0 4400 0C21        BSI  L  LOADV       SET MSG -PRINT      8B927260
0BAD 0 6700 0DCD        LDX  L3 PR4-1       LOAD MSG ADRS       8B927270
0BAF 0 4400 0C21        BSI  L  LOADV       SET MSG - PRINT     8B927280
0BB1 0 C400 02E1        LD   L  SWO         GET SWITCHES        8B927290
0BB3 0 1005             SLA     5           CK HEADING BYPASS   8B927300
0BB4 0 4C28 0BBE        BSC  L  BY,&Z       BCH IF ON           8B927310
0BB6 0 6700 0DE9        LDX  L3 NOTE-1      LOAD MSG ADRS       8B927320
0BB8 0 4400 0C21        BSI  L  LOADV       SET MSG - PRINT     8B927330
0BBA 0 6700 0E30        LDX  L3 NOTE1-1     IX # MSG ADRS       8B927340
0BBC 0 4400 0C21        BSI  L  LOADV       SET MSG - PRINT     8B927350
0BBE 0 1010       BY    SLA     16          CLEAS ACC           8B927360
0BBF 0 4400 0C19        BSI  L  LOADK       SET BLANK MSG       8B927370
0BC1 0 4400 044C        BSI  L  PCCO        PRINT               8B927380
0BC3 0 6500 0000  MT520 LDX  L1 *-*         RESTORE IX 1        8B927390
0BC5 0 6600 06E0  MT521 LDX  L2 DST         RESTORE IX 2        8B927400
0BC7 0 1010             SLA     16          CLEAR A REG         8B927410
0BC8 0 D400 0B6B        STO  L  GRL1&1                          8B927420
0BCA 0 D0D3             STO     LNSW                            8B927430
0BCB 0 D0AE             STO     MT526&1                         8B927440
0BCC 0 C400 0D2D        LD   L  MT730       GET 0007            8B927450
0BCE 0 D0D0             STO     PRSW                            8B927460
0BCF 0 4400 083C        BSI  L  MLG         PRINT AVERAGES      8B927470
0BD1 0 0F35             DC      MSG10&4                         8B927480
0BD2 0 0F19             DC      MSG4&8                          8B927490
0BD3 0 A004       A004  DC      /A004       ID A4               8B927500
0BD4 0 0004             DC      /0004       LINE 0-FDRM 4       8B927510
                  *                                            8B927520
                  *              REWIND THE DRIVE-RESTORE       8B927530
                  *                                            8B927540
0BD5 0 C400 0939        LD   L  MTTZ1                           8B927550
0BD7 0 D400 0B27        STO  L  MT51D       RESTORE PROG        8B927560
0BD9 0 C400 093A        LD   L  MTTZ1&1                         8B927570
0BDB 0 D400 0B28        STO  L  MT51D&1     RESTORE PROG        8B927580
0BDD 0 4400 07F0  MT581 BSI  L  RWD         GO REWIND      SRC  8B927590
0BDF 0 C400 02E1        LD   L  SWO         GET SW FNC 0        8B927600
0BE1 0 1008             SLA     8                               8B927610
0BE2 0 4810             BSC  -              IS LOOP RD ON       8B927620
0BE3 0 702F             MDX     MT582       NO                  8B927630
0BE4 0 1010             SLA     16          RESTORE NECESSARY   8B927640
0BE5 0 D400 0926        STO  L  MTTX3       *VALUES IN RTN      8B927650
0BE7 0 D05A             STO     LINE                            8B927660
0BE8 0 D0B5             STO     LNSW                            8B927670
0BE9 0 18D0             RTE     16                              8B927680
0BEA 0 1010             SLA     16                              8B927690
0BEB 0 DC00 092E        STO  L  MTTYC                           8B927700
0BED 0 DC00 0930        STO  L  MTTYD                           8B927710
0BEF 0 DC00 0932        STO  L  MTTYE                           8B927720
0BF1 0 D400 0B6B        STO  L  GRL1&1                          8B927730
0BF3 0 D400 0B7A        STO  L  MT526&1                         8B927740
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0BF5 0 6700 FFD1        LDX  L3 -47                             8B927750
0BF7 0 D700 0E9B  MT585 STO  L3 TOTA&50                         8B927760
0BF9 0 7301             MDX  3  1                               8B927770
0BFA 0 70FC             MDX     MT585                           8B927780
0BFB 0 D042             STO     MT5X4                           8B927790
0BFC 0 C400 0D2D        LD   L  MT730                           8B927800
0BFE 0 D400 089F        STO  L  PRSW                            8B927810
0C00 0 C400 0939        LD   L  MTTZ1                           8B927820
0C02 0 D400 0B27        STO  L  MT51D                           8B927830
0C04 0 C400 093A        LD   L  MTTZ1&1                         8B927840
0C06 0 D400 0B28        STO  L  MT51D&1                         8B927850
0C08 0 C827             LDD     MT5Q6                           8B927860
0C09 0 DC00 0A1C        STD  L  MT5Q7                           8B927870
0C0B 0 C031             LD      MT5X3                           8B927880
0C0C 0 D400 0462        STO  L  SW                              8B927890
0C0E 0 C029             LD      ADRS1                           8B927900
0C0F 0 D400 0A30        STO  L  MT50A&1                         8B927910
0C11 0 4C00 0A61        BSC  L  MT583       LOOP READ           8B927920
0C13 0 4C00 0771  MT582 BSC  L  MONR1       EXIT                8B927930
                  *                                            8B927940
                  *                                            8B927950
                  *              INTRPT RETURN ON WRITE         8B927960
                  *                                            8B927970
0C15 0 4C80 078D  MT522 BSC  I  TMWRT       GO TO CALLING RTN   8B927980
                  *                                            8B927990
                  *              INTRPT RETURN ON TM READ       8B928000
                  *                                            8B928010
0C17 0 4C80 07C0  MT523 BSC  I  TMRDT                           8B928020
                  *                                            8B928030
                  *              LOAD I/O AREA WITH CONSTANT    8B928040
0C19 0 0000       LOADK DC      *-*         RETURN ADRS         8B928050
0C1A 0 631C             LDX  3  28                              8B928060
0C1B 0 D700 0D92  LOAD1 STO  L3 PRA3-1      STORE IN MSG AREA   8B928070
0C1D 0 73FF             MDX  3  -1                              8B928080
0C1E 0 70FC             MDX     LOAD1                           8B928090
0C1F 0 4C80 0C19        BSC  I  LOADK       RETURN TO MAINLINE  8B928100
                  *                                            8B928110
                  *              LOAD I/O AREA WITH MESSAGE     8B928120
                  *                                            8B928130
0C21 0 0000       LOADV DC      *-*         RETURN ADDR         8B928140
0C22 0 6B02             STX  3  MT510&1                         8B928150
0C23 0 631C             LDX  3  28                              8B928160
0C24 0 C700 0000  MT510 LD   L3 *-*         LOAD MESSAGE        8B928170
0C26 0 D700 0D92        STO  L3 PRA3-1      STORE IN MSG AREA   8B928180
0C28 0 73FF             MDX  3  -1                              8B928190
0C29 0 70FA             MDX     MT510                           8B928200
0C2A 0 4400 044C        BSI  L  PCCO        PRINT MESSAGE       8B928210
0C2C 0 4C80 0C21        BSC  I  LOADV       RETURN TO MAINLINE  8B928220
                  *                                            8B928230
                  *                                            8B928240
                  *              ROUTINE 5 CONSTANTS            8B928250
                  *                                            8B928260
0C2E   0000             BSS  E  0                               8B928270
0C2E 0 4400 0C46  KBSC  BSI  L  LDLFT       BRANCH TO LFT COL LD 8B928280
0C30 0 1000       MT5Q6 NOP     0           PROG RESTORE        8B928290
0C31 0 1000             NOP     0           *                   8B928300
0C32 0 0000             DC      0           DELAY COUNT 1       8B928310
0C33 0 0000       DLY1  DC      0           *                   8B928320
0C34 0 0000             DC      0           DELAY COUNT 2       8B928330
0C35 0 0000       DLY2  DC      0           *                   8B928340
0C36 0 0000       DLYC  DC      0           DELAY STORAGE       8B928350
0C37 0 0000             DC      0           *                   8B928360
0C38 0 067E       ADRS1 DC      MT5X0&4     CONSTANTS           8B928370
0C39 0 0676       ADRS2 DC      MT5X0-4     *                   8B928380
0C3A 0 0056       K0086 DC      86          *                   8B928390
0C3B 0 000A       K0010 DC      10          *                   8B928400
0C3C 0 001E       MT5X2 DC      30          *                   8B928410
0C3D 0 0002       MT5X3 DC      2           *                   8B928420
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ATE   01JUL66 01NOV66 15MAY67 01SEP67 01OCT67 14NOV69 30JAN70   PRDG ID 08B9-2
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0C3E 0 0000      MT5X4 DC     0           SERIES COUNT            8B928430
0C3F 0 3500      MT5X8 DC     /3500       PRINTER   E             8B928440
0C40 0 2600      MT5X9 DC     /2600       PRINTER 0              8B928450
0C41 0 2020      KOASH DC     /2020       PRINTER OASH           8B928460
0C42 0 0000      LINE  DC     0           LINE COUNT             8B928470
0C43 0 0000      MT5XE DC     0           UPPER LIMIT STORAGE    8B928480
0C44 0 0000            OC     0           LOWER LIMIT STORAGE    8B928490
0C45 0 0005      MT5XF OC     5           NUMBER PASSES          8B928500
                 *                                               8B928510
                 +                                               8B928520
                 *                        ROUTINE TO LOAO THE LEFT 8B928530
                 *                        * COLUMN                8B928540
                 *                                               8B928550
0C46 0 0000      LDLFT DC     0                           SE     8B928560
0C47 0 6B22            STX   3 LOLFE&1     SAVE INOEXING          8B928570
0C48 0 6323            LOX   3 35          IX 3 # NUMBER OF REC   8B928580
0C49 0 4400 0780 LOLFA BSI  L TMWRT        WRITE                  8B928590
0C4B 0 73FF            MDX   3 -1          DECR INDEX             8B928600
0C4C 0 70FC            MOX     LOLFA       LOOP                   8B928610
0C4O 0 6323            LOX   3 35          SET BACKSPACE INOEX    8B928620
0C4E 0 6600 06E0 LOLFB LDX  L2 DST         RESTORE IX 2           8B928630
0C50 0 4400 07C9       BSI  L BSP          BACKSPACE 1 REC   SRC  8B928640
0C52 0 620A            LDX   2 10          SET DLY LOOP IX        8B928650
0C53 0 C400 06B1       LO   L MT591        GET OLY CONSTANT       8B928660
0C55 0 D019            STO     LOLFX       SET                    8B928670
0C56 0 6B06            STX   3 LOLFY&1     SAVE IX 3              8B928680
0C57 0 4400 038C LOLFC BSI  L DELAY        GO OELAY          SRC  8B928690
0C59 0 0C6E            OC      LOLFX-1     AORS OF DELAY COUNT    8B928700
0C5A 0 72FF            MOX   2 -1          DECR INDEX             8B928710
0C5B 0 70FB            MDX     LDLFC       LDDP              -    8B928720
0C5C 0 6700 0000 LOLFY LDX  L3 0          RESTORE IX 3           8B928730
0C5E 0 73FF            MDX   3 -1          DECR BSP INDEX         8B928740
0C5F 0 70EE            MDX     LDLFB       LDDP                   8B928750
0C60 0 6600 06E0       LOX  L2 DST         RESTORE IX 2           8B928760
0C62 0 C400 0928       LD   L MTTX9        GET WRT FUNCTIDN       8B928770
0C64 0 4400 0830       BSI  L PRDWT        SET UP TD WRT          8B928780
0C66 0 4400 081F       BSI  L INTRT        SET INTRPT RETURN      8B928790
0C68 0 07AA            OC      TMWR4                              8B928800
0C69 0 6700 0000 LDLFE LDX  L3 0          RESTDRE IX 3           8B928810
0C6B 0 4C80 0C46       BSC  I LDLFT        EXIT                   8B928820
0C6E    0000           8SS  E 0                                  8B928830
0C6E 0 0000            DC      0           OELAY CONSTANT         8B928840
0C6F 0 0000      LDLFX DC     0           * STDRAGE              8B928850
                 *                                               8B928860
                 *XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX  8B928870
                 *XXXXXXXXXXXXXXX ROUTINE SIX XXXXXXXXXXXXXXXXX   8B928880
                 *XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX  8B928890
                 *                                               8B928900
0C70 0 7FFF      MT6X8 DC     /7FFF       CDNSTANT               8B928910
0C71 0 1010      MTT07 SLA    16          ZERD ACCUM             8B928920
0C72 0 D400 0926       STD  L MTTX3        SET DELAY CDNO # 0     8B928930
0C74 0 0400 0D87       STD  L MT7X3        CLEAR ALL TDTALS       8B928940
0C76 0 D400 0DB8       STD  L MT7X4                               8B928950
0C78 0 D400 0D89       STD  L MT7X5                               8B928960
0C7A 0 D400 0D8A       STD  L MT7X6                               8B928970
0C7C 0 D400 0D2E       STD  L LDW                                 8B928980
0C7E 0 0400 0D2F       STD  L HI                                  8B928990
0C80 0 D400 0D30       STO  L AVG                                 8B929000
0C82 0 C400 0925       LO   L MTTX1        GET 1                  8B929010
0C84 0 0D400 0D8B      STD  L MT7X7        SET FIRST PASS SW      8B929020
0C86 0 D400 0D86       STD  L MT7X2        SET RO/RERD SW # RD    8B929030
0C88 0 COE7            LD      MT6X8       GET LDW CDNSTANT       8B929040
0C89 0 D400 0D90       STD  L MT7Y1        SET AS LDW             8B929050
0C8B 0 1010            SLA    16           ZERD ACCUM             8B929060
0C8C 0 D400 0D91       STD  L MT7Y2        SET AS HIGH            8B929070
0C8E 0 C400 0D84 MT700 LD   L MT7X0                               8B929080
0C90 0 D400 0DB5       STD  L MT7X1        SET IN LDDP CDNTROL    8B929090
                 *                                               8B929100
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                 *                        PREPARE TO WRITE        8B929110
                 *                                               8B929120
0C92 0 C400 0928 MT719 LD   L MTTX9        GET WRITE FUNCTION     8B929130
0C94 0 4400 0830       8SI  L PRDWT        GO SET UP         SRC  8B929140
0C96 0 4400 081F       8SI  L INTRT        GO SET INTR RETURN SRC 8B929150
0C98 0 0C15            OC      MT522                              8B929160
                 *                                               8B929170
                 *                        WRITE FIRST RECORD      8B929180
                 *                                               8B929190
0C99 0 4400 078D       BSI  L TMWRT        WRITE                  8B929200
                 *                                               8B929210
                 *                        WRITE SECONO RECORO     8B929220
                 *                                               8B929230
0C9B 0 4400 0780       BSI  L TMWRT        WRITE                  8B929240
                 *                                               8B929250
                 *                        WRITE THIRD RECORD      8B929260
                 *                                               8B929270
0C9D 0 4400 078D       8SI  L TMWRT        WRITE                  8B929280
                 *                                               8B929290
                 *                        WRITE LONG RECDRO       8B929300
                 *                                               8B929310
0C9F 0 C400 008C       LD   L MT7XA                               8B929320
0CA1 0 0206            STO   2 6           SET WD CT              8B929330
0CA2 0 D400 0E9C       STD  L IDA          SET IN I/O AREA        8B929340
0CA4 0 4400 078D       8SI  L TMWRT        WRITE                  8B929350
0CA6 0 4400 0910       BSI  L CN2          GO SET CDNSTANTS   SRC 8B929360
                 *                                               8B929370
                 *                        POSITION TAPE           8B929380
                 *                                               8B929390
0CA8 0 6304      MT702 LDX   3 4                                  8B929400
0CA9 0 6B03      MT703 STX   3 MT704&1     SAVE IX 3             8B929410
0CAA 0 4400 07C9       BSI  L BSP          GD BACKSPACE       SRC 8B929420
0CAC 0 6700 0000 MT704 LOX  L3 0          RESTORE IX 3           8B929430
0CAE 0 73FF            MDX   3 -1          IS TAPE PDSITIDNED     8B929440
0CAF 0 70F9            MDX     MT703       ND-LOOP               8B929450
                 *                                               8B929460
                 *                        SET UP TD REAO          8B929470
                 *                                               8B929480
0CB0 0 C400 092C       LD   L MTTY9        GET READ FUNCTIDN      8B929490
0CB2 0 4400 0830       BSI  L PRDWT        GD SET UP         SRC  8B929500
0CB4 0 4400 081F       BSI  L INTRT        GD SET TIME INT RET SRC 8B929510
0CB6 0 07C4            DC      TMRD4                              8B929520
                 *                                               8B929530
                 *                        REAO FIRST RECDRD       8B929540
                 *                                               8B929550
0CB7 0 4400 07C0       BSI  L TMRDT        GD REAO           SRC  8B929560
                 *                                               8B929570
                 *                        READ SECONO RECDRD      8B929580
                 *                                               8B929590
0CB9 0 4400 07C0       BSI  L TMRDT        GD READ           SRC  8B929600
                 *                                               8B929610
                 *                        REAO THIRD RECDRD       8B929620
                 *                                               8B929630
0CBB 0 4400 07C0       BSI  L TMRDT        GD READ           SRC  8B929640
                 *                                               8B929650
                 *                        CHECK REAO/REREAD AND   8B929660
                 *                        FIRST PASS SWITCHES     8B929670
                 *                                               8B929680
0CBD 0 C400 0D8B       LD   L MT7X7        GET FIRST PASS SW      8B929690
0CBF 0 4C18 0CC3       BSC  L MT713,&-     IS THIS FIRST PASS     8B929700
0CC1 0 4C00 0D3E       BSC  L MT711        YES                    8B929710
0CC3 0 C400 0D86 MT713 LD   L MT7X2        GET RD/CERO SW         8B929720
0CC5 0 D001            STD     MT710&1      SET IN PRDG            8B929730
0CC6 0 6700 0000 MT710 LOX  L3 0          IX 3 # RO/RERD SW      8B929740
0CC8 0 C400 07BC       LD   L TWRX0        GET THE TIME           8B929750
0CCA 0 D205            STD   2 5           SAVE                   8B929760
0CCB 0 0700 0087       STD  L3 MT7X3       SAVE                   8B929770
0CCD 0 7300            MDX   3 0           IS RD/RERD SW # RD     8B929780
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OCCE 0 7001	MDX	MT705	YES	8B929790
OCCF 0 700D	MDX	MT70F	NO	8B929800
OCDO 0 4400 07C9	MT705 BSI L	BSP	GO BACKSPACE SRC	8B929810
*				8B929820
*		PREPARE TO WRITE		8B929830
*				8B929840
OCD2 0 C400 0928	MT70B LD L	MTTX9	GET WRITE FUNCTION	8B929850
OCD4 0 4400 0830	BSI L	PROWT	GO SET UP SRC	8B929860
OC06 0 4400 07C0	BSI L	TMROT	GO WRT SRC	8B929870
OC08 0 1010	SLA	16	ZERO ACCUM	8B929880
OCD9 0 D400 0D86	STO L	MT7X2	CLEAR RD/RERO SW	8B929890
OC0B 0 6303	LDX 3 3		SET TO BACKSPACE 3	8B929900
OCOC 0 70CC	MDX	MT703		8B929910
*				8B929920
*		READ/REREAD SW # REREAO		8B929930
*				8B929940
OCD0 0 C400 0D8A	MT7DF LD L	MT7X6	GET REF TIME	8B929950
OCOF 0 9400 0087	S L	MT7X3	SUB REREAD TIME	8B929960
OCE1 0 D400 0D8F	STO L	MT7Y0	SAVE	8B929970
OCE3 0 8400 0D89	A L	MT7X5	AOD TO TOTAL	8B929980
OCE5 0 D400 0089	STO L	MT7X5	SAVE	8B929990
OCE7 0 C400 0087	LD L	MT7X3	GET NEW COUNT	8B930000
OCE9 0 9400 009D	S L	MT7Y1	SUB LOW VALUE	8B930010
OCEB 0 4810	BSC -		IS NEW COUNT LOW	8B930020
OCEC 0 7004	MOX	MT750	NO	8B930030
OCED 0 C400 0087	LD L	MT7X3	SET NEW CT AS LOW	8B930040
OCEF 0 0400 0090	STO L	MT7Y1		8B930050
OCF1 0 C400 0087	MT750 LD L	MT7X3	GET NEW CT	8B930060
OCF3 0 9400 0091	S L	MT7Y2	SUB HIGH	8B930070
OCF5 0 4808	BSC &		IS NEW COUNT HIGH	8B930080
OCF6 0 7004	MOX	MT751	NO	8B930090
OCF7 0 C400 0087	LD L	MT7X3	SET NEW CT AS HIGH	8B930100
OCF9 0 0400 0091	STO L	MT7Y2	*	8B930110
OCFB 0 74FF 0085	MT751 MDX L	MT7X1,-1	DECR LOOP CONTROL	8B930120
OCFO 0 7079	MOX	MT718	LOOP CNTRL NOT ZERO	8B930130
*				8B930140
*		OUTPUT RESULTS		8B930150
*				8B930160
OCFE 0 1010	MT744 SLA	16	CLEAR SWITCH	8B930170
OCFF D 0400 0088	STO L	MT7X4	*	8B930180
OD01 D C400 0D8A	LD L	MT7X6	GET REF TIME	8B930190
0003 0 9400 0D90	S L	MT7Y1	SUB LOW COUNT	8B930200
0005 0 0400 0D90	STO L	MT7Y1	SET AS LOW	8B930210
0007 0 4810	BSC -		SKIP IF NEG	8B930220
0008 0 7029	MDX	ERR	BRANCH TO ERROR	8B930230
0D09 D 1010	SLA	16	CLEAR A REG	8B930240
0D0A 0 9400 0090	S L	MT7Y1	MAKE POSITIVE	8B930250
0D0C 0 0400 0090	STO L	MT7Y1	SAVE	8B930260
000E 0 C400 0091	MT754 LD L	MT7Y2	GET HIGH COUNT	8B930270
0010 0 94D0 008A	S L	MT7X6	SUB REG TIME	8B930280
0D12 0 0400 0091	STO L	MT7Y2	SET AS HIGH	8B930290
0014 0 4C10 0D1A	BSC L	MT755,-	BRANCH IF POS	8B930300
0016 0 1010	SLA	16	CLEAR A REG	8B930310
0017 0 9079	S	MT7Y2	MAKE POSITIVE	8B930320
0018 0 0078	STO	MT7Y2	SAVE	8B930330
0D19 0 701E	MOX	ERR1	BRANCH	8B930340
001A 0 C06E	MT755 LD	MT7X5	GET TOTAL CREEP	8B930350
0D1B 0 1890	SRT	16	CALCULATE AVG CREEP	8B930360
0D1C 0 A871	D	MT7XE		8B930370
0010 0 4820	BSC	Z		8B930380
001E 0 7001	MDX	MT715		8B930390
0D1F 0 1800	RTE	16		8B930400
0020 0 D068	MT715 STO	MT7X5		8B930410
0021 0 4C28 0045	BSC L	MT714,&Z	IS CREEP NEG	8B930420
0023 0 4820	BSC	Z	IS CREEP ZERO	8B930430
0024 0 7016	MOX	ERR2	ND	8B930440
0025 0 4400 083C	BSI L	MLG	PRINT ZERO CREEP	8B930450
0027 0 0F39	OC	MSG11&4		8B930460

OD28 0 0F01	DC	MSG1&8		8B930470
OD29 0 E007	E007 OC	/E007	ID E7	8B930480
OD2A 0 0005	DC	/0005	LINE 0- FORM 5	8B930490
OD2B 0 4C00 0771	MT712 BSC L	MONR1	EXIT	8B930500
OD2D 0 0007	MT730 DC	7		8B930510
002E 0 0000	LOW DC	0	NEG CREEP SWS	8B930520
OD2F 0 0000	HI OC	0	*	8B930530
OD30 0 0000	AVG OC	0	*	8B93054C
OD31 0 8000	K8000 DC	/8000	CONSTANT	8B930550
*				8B93056O
*		SET ERROR SWITCH		8B930570
*				8B930580
OD32 0 COFE	ERR LO	K8000	SET LOW SW	8B930590
OD33 0 DOFA	STO	LOW	*	8B9306D0
0034 0 C400 036E	LD L	ONE	GET ONE	8B930610
0036 0 0051	STO	MT7X4	SET NEG CREEP SW	8B930620
0037 D 7006	MDX	MT754	BRANCH	8B930630
OD38 0 COF8	ERR1 LD	K8000	SET HI SW	8B930640
OD39 0 00F5	STO	HI	*	8B930650
003A 0 70DF	MDX	MT755		8B930660
OD3B 0 COF5	ERR2 LO	K8000	SET AVG SW	8B930670
OD3C 0 DOF3	STO	AVG	*	8B930680
0030 0 7032	MOX	MT716		8B930690
*				8B930700
*		FIRST PASS SW IS ON		8B93071D
*				8B930720
003E 0 C400 07BC	MT711 LD L	TWRXD	GET THE TIME	8B930730
0D40 0 D049	STO	MT7X6	SAVE	8B930740
0041 0 1010	SLA	16	ZERO ACCUM	8B930750
0042 0 D048	STO	MT7X7	CLEAR 1ST PASS SW	8B930760
0043 0 4C00 0CC3	BSC L	MT713		8B930770
*				8B93078D
*		CREEP IS FORWARO PRINT FFF		8B930790
*				8B930800
0D45 0 1010	MT714 SLA	16		8B930810
0D46 0 9042	S	MT7X5		8B930820
0D47 0 D041	STO	MT7X5		8B930830
0048 0 7400 0088	MDX L	MT7X4,0	CK NEG CREEP SW	8B930840
0D4A 0 7025	MDX	MT716	BRANCH IF SET	8B930850
0D4B 0 C500 02EA	LD L1	EDIT&6	GET OR MODEL	8B93086D
0D4D 0 0005	STO	MT760&1	SET IN IX	8B930870
0D4E 0 C400 02EC	LD L	EOIT&8	GET MEM SPEED	8B930880
0D50 0 4C30 0D60	BSC L	MT761,-Z	BRANCH IF 4 MIC	$ 8B930890
0052 0 6700 0000	MT760 LDX L3	0	IX # MODEL	8B930900
0D54 0 C700 0063	LO L3	MT762	GET CONSTANT	8B930910
0D56 0 9039	S	MT7Y1	SUB LOW CREEP	8B930920
0D57 0 4C30 0D69	BSC L	MT763,-Z	BRANCH IF TOO LOW	8B930930
0D59 0 4400 083C	BSI L	MLG	PRINT CREEP	8B930940
OD5B 0 0F39	DC	MSG11&4		8B93095D
005C 0 0F01	DC	MSG1&8		8B930960
005D 0 A007	A007 OC	/A007		8B93097D
OD5E 0 0005	DC	/0005	LINE 0- FORM 5	8B930980
OD5F 0 70CB	MOX	MT712	BRANCH	8B93099D
0D60 0 7403 0D53	MT761 MDX L	MT760&1,3	INCR IX TO 4 MIC	8B931000
0062 0 70EF	MOX	MT760	BRANCH	8B931010
0D63 0 000E	MT762 DC	14	CONSTANTS	8B931020
0D64 0 0D2A	DC	42	*	8B931030
0D65 0 0015	OC	21	*	8B931040
0066 0 0007	DC	7	*	8B931050
0D67 0 0015	OC	21	*	8B931060
0D68 D 000A	DC	10	*	8B931070
0069 0 4400 083C	MT763 BSI L	MLG	CREEP TOO LOW	8B931080
0D6B 0 0F39	DC	MSG11&4		8B931090
006C 0 0F01	DC	MSG1&8		8B931100
0D6D 0 E001	E001 OC	/E001		8B931110
0D6E 0 0005	OC	/0005	LINE 0- FORM 5	8B93112D
006F 0 70BB	MDX	MT712	BRANCH	8B931130
*				8B931140

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                         *                          CREEP IS BCKWARD PRINT BBB    8B931150
                         *                                                        8B931160
        OD70 0 4400 083C MT716 BSI  L MLG          BACKWARD CREEP                 8B931170
        DD72 D DF39            DC     MSG11&4                                      8B931180
        OD73 0 0F01           DC     MSG1&8                                       8B931190
        OD74 0 EDO8     E008  DC     /E008         ID E8                          8B931200
        OD75 0 0005           DC     /0005         LINE 0- FORM 5                 8B931210
        OD76 0 70B4           MDX    MT712                                        8B931220
        OD77 0 C400 0925 MT718 LD  L MTTX1         GET 0001                       8B931230
        OD79 0 D00C           STD    MT7X2         SET RD/RERD # RD               8B931240
        OD7A 0 6303           LDX   3 3                                           8B931250
        OD7B 0 6B03     MT746 STX   3 MT745&1                                     8B931260
        OD7C 0 4400 07C9      BSI  L BSP           GO BACKSPACE          SRC      8B931270
        OD7E 0 6700 0000 MT745 LDX  L3 0                                          8B931280
        OD80 D 73FF           MDX    3 -1                                         8B931290
        OD81 0 70F9           MDX    MT746                                        8B931300
        OD82 0 4C00 0C92      BSC  L MT7I9                                        8B931310
                         *                                                        8B931320
                         *              RDUTINE CONSTANTS                         8B931330
                         *                                                        8B931340
        OD84 0 000A     MT7X0 DC     10            CONSTANT                       8B931350
        OD85 0 0000     MT7X1 DC     0             LDDP CONTRDL                   8B931360
        OD86 0 0000     MT7X2 DC     0             RD/RERD SW                     8B931370
        OD87 0 0000     MT7X3 DC     0             2ND READ TIME                  8B931380
        OD88 0 0000     MT7X4 DC     0             1ST READ TIME                  8B931390
        OD89 0 0000     MT7X5 DC     0             TOTAL CREEP                    8B931400
        OD8A 0 0000     MT7X6 DC     0             REFERENCE TIME                 8B931410
        OD8B D 00D1     MT7X7 DC     1             FIRST PASS SW                  8B931420
        OD8C 0 40C8     MT7XA DC     /40C8         WD CT # 200                    8B931430
        OD8D 0 0003     MT7XC DC     3                                            8B931440
        OD8E 0 00DA     MT7XE DC     10                                           8B931450
        DD8F 0 0000     MT7Y0 DC     0             TEMP STORAGE                   8B931460
        OD90 0 7FFF     MT7Y1 DC     /7FFF         LOW VALUE STORAGE              8B931470
        OD91 0 0000     MT7Y2 DC     0             HIGH VALUE STORAGE             8B931480
                         *                                                        8B931490
                         *                                                        8B931500
                         *                                                        8B931510
                         *                                                        8B931520
                         *                        PRINT AREA                      8B931530
                         *                                                        8B931540
        OD92   0000           BSS   E 0                                           8B931550
        OD92 0 0000     PRA4  DC     /0000                                        8B931560
        OD93 0 0000     PRA3  DC     /0000                                        8B931570
        OD94 0 0000     PRA1  DC     /0000                                        8B931580
        OD95 0 2C00           DC     /2C00         *                              8B931590
        OD96   001B     PRA   BSS    27            PRINT AREA                     8B931600
        ODB1 0 FFFF           DC     /FFFF                                        8B931610
                         *                                                        8B931620
                         *                        SPECIAL MESSAGES                8B931630
                         *                                                        8B931640
        ODB2 0 0000     PR3   DC     /0000                                        8B931650
        ODB3 0 0000           DC     /0000                                        8B931660
        ODB4 0 002C           DC     /002C         *                             8B931670
        ODB5 0 2020           DC     /2020         --                            8B931680
        ODB6 0 2020           DC     /2020         --                            8B931690
        ODB7 0 2020           DC     /2020         --                            8B931700
        ODB8 0 0120           DC     /0120         1-                            8B931710
        ODB9 0 2020           DC     /2020         --                            8B931720
        ODBA 0 2002           DC     /2002         -2                            8B931730
        DDBB 0 2020           DC     /2020         --                            8B931740
        ODBC 0 2003           DC     /2003         -3                            8B931750
        ODBD 0 2004           DC     /2004         -4                            8B931760
        ODBE 0 2005           DC     /2005         -5                            8B931770
        ODBF 0 2006           DC     /2006         -6                            8B931780
        ODC0 0 2008           DC     /2008         -8                            8B931790
        ODC1 0 2001           DC     /2001         -1                            8B931800
        ODC2 0 0A20           DC     /0A20         0-                            8B931810
        ODC3 0 2002           DC     /2002         -2                            8B931820
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        ODC4 0 0A20           DC     /0A20         0-                            8B931830
        ODC5 0 030A           DC     /030A         30                            8B931840
        ODC6 0 2006           DC     /2006         -6                            8B931850
        ODC7 0 0A20           DC     /0A20         0-                            8B931860
        ODC8 0 3B02           DC     /3B02         .2                            8B931870
        ODC9 0 2020           DC     /2020         --                            8B931880
        ODCA 0 0120           DC     /0120         1-                            8B931890
        ODCB 0 0320           DC     /0320         3-                            8B931900
        ODCC 0 052C           DC     /052C         5*                            8B931910
        ODCD 0 FFFF           DC     /FFFF                                       8B931920
        ODCE 0 0000     PR4   DC     /0000                                       8B931930
        ODCF 0 0000           DC     /0000                                       8B931940
        ODD0 0 002C           DC     /002C         *                            8B931950
        ODD1 0 1629           DC     /1629         WR                           8B931960
        DDD2 0 3913           DC     /3913         IT                           8B931970
        ODD3 0 3500           DC     /3500         E                            8B931980
        ODD4 0 3726           DC     /3726         GD                           8B931990
        ODD5 0 0034           DC     /0034         D                            8B932000
        ODD6 0 2616           DC     /2616         DW                           8B932010
        ODD7 0 2500           DC     /2500         N                            8B932020
        ODD8 0 1339           DC     /1339         TI                           8B932030
        ODD9 0 2435           DC     /2435         ME                           8B932040
        ODDA 0 0000           DC     /0000                                      8B932050
        ODDB 0 0000           DC     /0000                                      8B932060
        ODDC 0 0000           DC     /0000                                      8B932070
        ODDD 0 0024           DC     /0024         M                            8B932080
        ODDE 0 3923           DC     /3923         IL                           8B932090
        ODDF 0 2339           DC     /2339         LI                           8B932100
        ODE0 0 1235           DC     /1235         SE                           8B93211D
        ODE1 0 3326           DC     /3326         CD                           8B932120
        ODE2 0 2534           DC     /2534         ND                           8B932130
        ODE3 0 1200           DC     /1200         S                            8B932140
        ODE4 0 2C12           DC     /2C12         *S                           8B932150
        ODE5 0 3533           DC     /3533         EC                           8B932160
        ODE6 0 2625           DC     /2625         DN                           8B932170
        ODE7 0 3412           DC     /3412         DS                           8B932180
        ODE8 0 002C           DC     /002C         *                            8B932190
        ODE9 0 FFFF           DC     /FFFF                                      8B932200
        ODEA 0 2526     NDTE  DC     /2526         ND                           8B932210
        ODEB 0 1335           DC     /1335         TE                           8B932220
        ODEC 0 2023           DC     /2023         -L                           8B93223D
        ODED 0 3613           DC     /3613         FT                           8B932240
        ODEE 0 0033           DC     /0033         C                            8B932250
        ODEF 0 2623           DC     /2623         DL                           8B932260
        ODF0 0 0039           DC     /0039         I                            8B932270
        ODF1 0 1200           DC     /1200         S                            8B932280
        ODF2 0 2326           DC     /2326         LD                           8B932290
        ODF3 0 3134           DC     /3134         AD                           8B932300
        ODF4 0 3534           DC     /3534         ED                           8B932310
        ODF5 0 0034           DC     /0034         D                            8B932320
        ODF6 0 1429           DC     /1429         UR                           8B932330
        ODF7 0 3925           DC     /3925         IN                           8B932340
        ODF8 0 3700           DC     /3700         G                            8B932350
        ODF9 0 1338           DC     /1338         TH                           8B932360
        ODFA 0 3500           DC     /3500         E                            8B932370
        ODFB 0 2331           DC     /2331         LA                           8B932380
        ODFC 0 1213           DC     /1213         ST                           8B932390
        ODFD 0 0004           DC     /0004         4                            8B932400
        ODFE 0 0037           DC     /0037         G                            8B932410
        ODFF 0 2600           DC     /2600         D                            8B932420
        OE00 0 3426           DC     /3426         DD                           8B932430
        OE01 0 1625           DC     /1625         WN                           8B932440
        OE02 0 0013           DC     /0013         T                            8B932450
        OE03 0 3924           DC     /3924         IM                           8B932460
        OE04 0 3512           DC     /3512         ES                           8B932470
        OE05 0 FFFF           DC     /FFFF                                      8B932480
        OE06 0 0000     PR8   DC     /0000                                      8B932490
        OE07 0 0000           DC     /0000                                      8B932500
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OE08 0 0000          DC    /0000
OE09 0 0000          DC    /0000
OE0A 0 3900          DC    /3900      I
OE0B 0 2500          DC    /2500      N
OE0C 0 1300          DC    /1300      T
OE0D 0 3500          DC    /3500      E
OE0E 0 2900          DC    /2900      R
OE0F 0 0000          DC    /0000
OE10 0 2900          DC    /2900      R
OE11 0 3500          DC    /3500      E
OE12 0 3300          DC    /3300      C
OE13 0 2600          DC    /2600      O
OE14 0 2900          DC    /2900      R
OE15 0 3400          DC    /3400      D
OE16 0 0000          DC    /0000
OE17 0 3700          DC    /3700      G
OE18 0 3100          DC    /3100      A
OE19 0 2700          DC    /2700      P
OE1A 0 0000          DC    /0000
OE1B 0 3900          DC    /3900      I
OE1C 0 2500          DC    /2500      N
OE1D 0 0000          DC    /0000
OE1E 0 3800          DC    /3800      H
OE1F 0 2500          DC    /2500      N
OE20 0 3400          DC    /3400      D
OE21 0 2900          DC    /2900      R
OE22 0 1300          DC    /1300      T
OE23 0 3800          DC    /3800      H
OE24 0 1200          DC    /1200      S
OE25 0 0000          DC    /0000
OE26 0 2600          DC    /2600      O
OE27 0 3600          DC    /3600      F
OE28 0 0000          DC    /0000
OE29 0 3900          DC    /3900      I
OE2A 0 2500          DC    /2500      N
OE2B 0 3300          DC    /3300      C
OE2C 0 3800          DC    /3800      H
OE2D 0 3500          DC    /3500      E
OE2E 0 1200          DC    /1200      S
OE2F 0 0000          DC    /0000
OE30 0 0000          DC    /0000
OE31 0 0000   NOTE1  DC    /0000
OE32 0 0000          DC    /0000
OE33 0 0020          DC    /0020      -
OE34 0 2020          DC    /2020      --
OE35 0 3431          DC    /3431      DA
OE36 0 1238          DC    /1238      SH
OE37 0 3512          DC    /3512      ES
OE38 0 0039          DC    /0039      I
OE39 0 2534          DC    /2534      ND
OE3A 0 3933          DC    /3933      IC
OE3B 0 3113          DC    /3113      AT
OE3C 0 3500          DC    /3500      E
OE3D 0 3929          DC    /3929      IR
OE3E 0 3700          DC    /3700      G
OE3F 0 2339          DC    /2339      LI
OE40 0 2439          DC    /2439      MI
OE41 0 1312          DC    /1312      TS
OE42 0 0000          DC    /0000
OE43 0 0000          DC    /0000
OE44 0 0000          DC    /0000
OE45 0 0000          DC    /0000
OE46 0 0000          DC    /0000
OE47 0 0000          DC    /0000
OE48 0 0000          DC    /0000
OE49 0 0000          DC    /0000
OE4A 0 0000          DC    /0000
OE4B 0 0000          DC    /0000
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8B932510
8B932520
8B932530
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8B932560
8B932570
8B932580
8B932590
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8B933120
8B933130
8B933140
8B933150
8B933160
8B933170
8B933180
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OE4C 0 FFFF               DC    /FFFF
OE4D 0 2C2C   LN3  DC    /2C2C         **
OE4E 0 2426          DC    /2426         MO
OE4F 0 3420          DC    /3420         O-
OE50 0 0000   LN3A DC    /0000         MODEL
OE51 0 0000   LN3B DC    /0000         TRACK
OE52 0 2013          DC    /2013         -T
OE53 0 2922          DC    /2922         RK
OE54 0 0000          DC    /0000
OE55 0 1218          DC    /1218         SY
OE56 0 1200          DC    /1200         S
OE57 0 3429          DC    /3429         DR
OE58 0 0000   LN3D DC    /0000         DRIVE NUMBER
OE59 0 0000          DC    /0000
OE5A 0 0000   LN3C DC    /0000         MEM SPEED
OE5B 0 0000          DC    /0000         *
OE5C 0 0024          DC    /0024         M
OE5D 0 3933          DC    /3933         IC
OE5E 0 0012          DC    /0012         S
OE5F 0 3533          DC    /3533         EC
OE60 0 0024          DC    /0024         M
OE61 0 3524          DC    /3524         EM
OE62 0 0000          DC    /0000
OE63 0 3431          DC    /3431         DA
OE64 0 1335          DC    /1335         TE
OE65 0 2000          DC    /2000         -
OE66 0 0000          DC    /0000
OE67 0 0000          DC    /0000
OE68 0 FFFF          DC    /FFFF
OE69   0033   TOTA BSS   51            VAR TOTAL STORAGE
OE9C   002D   IDA  BSS   45            INPUT/OUTPUT AREA
*XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
*XXXXXXXXXXXXXXX SET UP AND PRINT HDINGS XXX
*XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX
OEC9 0 0000   LDSP DC    0
OECA 0 C480 083C      LD    I  MLG          GET TYPE ADRS
OECC 0 D016               STD      LDSP1&1      SET
OECD 0 7401 083C      MDX   L  MLG,1        INCR RETURN
OECF 0 C480 083C      LD    I  MLG          GET HDING ADRS
OED1 0 D015               STD      LDSP3&1      SET
OED2 0 7401 083C      MDX   L  MLG,1        INCR RETURN
OED4 0 6A21               STX   2  LDSP2&1      SAVE IX 2
OED5 0 C400 02E1      LD    L  SW0          GET SWS
OED7 0 180A               SRA      10
OED8 0 4C04 OEF5      BSC   L  LDSP2,E      BRANCH # BYPASS
OEDA 0 631C               LDX   3  28           CLEAR MSG AREA
OEDB 0 1010               SLA      16           *
OEDC 0 D700 0D92  LDSP5 STO   L3 PRA4        *
OEDE 0 73FF               MDX   3  -1           *
OEDF 0 70FC               MDX      LDSP5        *
OEE0 0 63F8               LDX   3  -8           SET MESSAGE
OEE1 0 62FC               LDX   2  -4           *
OEE2 0 C600 0000  LDSP1 LD    L2 *-*          *
OEE4 0 D600 0D9A          STD   L2 PRA&4        *
OEE6 0 C700 0000  LDSP3 LD    L3 *-*          *
OEE8 0 D700 0DAE          STO   L3 PRA3&27      *
OEEA 0 C700 0F31          LD    L3 MSG9&8       *
OEEC 0 D700 0DA4          STD   L3 PRA&14       *
OEEE 0 7201               MDX   2  1            *
OEEF 0 7001               MDX      LDSP4        *
OEF0 0 62FC               LDX   2  -4           *
OEF1 0 7301   LDSP4 MDX   3  1            *
OEF2 0 70EF               MDX      LDSP1        *
OEF3 0 4400 044C          BSI   L  PCCD         PRINT MESSAGE
OEF5 0 6600 0000  LDSP2 LDX   L2 *-*          RESTORE IX 2
OEF7 0 4C80 0EC9          BSC   I  LDSP         EXIT
*
*                              HEADING MESSAGES
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8B933190
8B933200
8B933210
8B933220
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8B933250
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8B933290
8B933300
8B933310
8B933320
8B933330
$ 8B933331
$ 8B933332
8B933340
8B933350
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`ATE   01JUL66   01NOV66   15MAY67   01SEP67   01OCT67   14NOV69   30JAN70   PROG ID   08B9-2
cC NO. 415178   415233   411731   411857   411875   431319   431319A   PAGE   25

`ATE   01JUL66   01NOV66   15MAY67   01SEP67   01OCT67   14NOV69   30JAN70   PROG ID   08B9-2
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2400 TIMING TEST

```
                    *
    OEF9 0 2439   MSG1  DC    /2439   MI        8B933870
    OEFA 0 2500         DC    /2500   N         8B933880
    OEFB 0 0000         DC    /0000             8B933890
    OEFC 0 3115         DC    /3115   AV        8B933900
    OEFD 0 3700         DC    /3700   G         8B933910
    OEFE 0 0000         DC    /0000             8B933920
    OEFF 0 2431         DC    /2431   MA        8B933930
    OF00 0 1700         DC    /1700   X         8B933940
                    *                           8B933950
    OF01 0 3412   MSG2  DC    /3412   DS        8B933960
    OF02 0 1600         DC    /1600   W         8B933970
    OF03 0 0000         DC    /0000             8B933980
    OF04 0 0000         DC    /0000             8B933990
    OF05 0 0000         DC    /0000             8B934000
    OF06 0 0000         DC    /0000             8B934010
    OF07 0 0000         DC    /0000             8B934020
    OF08 0 0000         DC    /0000             8B934030
                    *                           8B934040
    OF09 0 2439   MSG3  DC    /2439   MI        8B934050
    OFOA 0 2500         DC    /2500   N         8B934060
    OFOB 0 0000         DC    /0000             8B934070
    OFOC 0 3133         DC    /3133   AC        8B934080
    OF0D 0 1323         DC    /1323   TL        8B934090
    OFOE 0 0000         DC    /0000             8B934100
    OFOF 0 2431         DC    /2431   MA        8B934110
    OF10 0 1700         DC    /1700   X         8B934120
                    *                           8B934130
    OF11 0 010A   MSG4  DC    /010A   10        8B934140
    OF12 0 2412         DC    /2412   MS        8B934150
    OF13 0 0000         DC    /0000             8B934160
    OF14 0 1531         DC    /1531   VA        8B934170
    OF15 0 2900         DC    /2900   R         8B934180
    OF16 0 0000         DC    /0000             8B934190
    OF17 0 2439         DC    /2439   MI        8B934200
    OF18 0 2500         DC    /2500   N         8B934210
                    *                           8B934220
                    *                           8B934230
    OF19 0 2526   MSG5  DC    /2526   ND        8B934240
    OF1A 0 1300         DC    /1300   T         8B934250
    OF1B 0 2934         DC    /2934   RD        8B934260
    OF1C 0 1800         DC    /1800   Y         8B934270
                    *                           8B934280
    OF1D 0 3326   MSG6  DC    /3326   CO        8B934290
    OF1E 0 2427         DC    /2427   MP        8B934300
    OF1F 0 2335         DC    /2335   LE        8B934310
    OF20 0 1335         DC    /1335   TE        8B934320
                    *                           8B934330
    OF21 0 1629   MSG7  DC    /1629   WR        8B934340
    OF22 0 1300         DC    /1300   T         8B934350
    OF23 0 3423         DC    /3423   DL        8B934360
    OF24 0 1800         DC    /1800   Y         8B934370
                    *                           8B934380
    OF25 0 2935   MSG8  DC    /2935   RE        8B934390
    OF26 0 3134         DC    /3134   AD        8B934400
    OF27 0 0034         DC    /0034   O         8B934410
    OF28 0 2318         DC    /2318   LY        8B934420
                    *                           8B934430
    OF29 0 2939   MSG9  DC    /2939   RI        8B934440
    OF2A 0 3400         DC    /3400   D         8B934450
    OF2B 0 0000         DC    /0000             8B934460
    OF2C 0 2931         DC    /2931   RA        8B934470
    OF2D 0 3400         DC    /3400   D         8B934480
    OF2E 0 0000         DC    /0000             8B934490
    OF2F 0 1425         DC    /1425   UN        8B934500
    OF30 0 3913         DC    /3913   IT        8B934510
                    *                           8B934520
    OF31 0 3115   MSG10 DC    /3115   AV        8B934530
                                                8B934540
```

2400 TIMING TEST

```
    OF32 0 3700         DC    /3700   G         8B934550
    OF33 0 3929         DC    /3929   IR        8B934560
    OF34 0 3700         DC    /3700   G         8B934570
                    *                           8B934580
    OF35 0 3329   MSG11 DC    /3329   CR        8B934590
    OF36 0 3535         DC    /3535   EE        8B934600
    OF37 0 2700         DC    /2700   P         8B934610
    OF38 0 0000         DC    /0000             8B934620
                    *                           8B934630
    OF39 0 3212   MSG13 DC    /3212   BS        8B934640
    OF3A 0 2700         DC    /2700   P         8B934650
    OF3B 0 3529         DC    /3529   ER        8B934660
    OF3C 0 2900         DC    /2900   R         8B934670
                    *                           8B934680
    OF3D 0 3132   MSG14 DC    /3132   AB        8B934690
    OF3E 0 2629         DC    /2629   OR        8B934700
    OF3F 0 1335         DC    /1335   TE        8B934710
    OF40 0 3400         DC    /3400   O         8B934720
                    *                           8B934730
    OF41 0 1425   MSG15 DC    /1425   UN        8B934740
    OF42 0 3913         DC    /3913   IT        8B934750
    OF43 0 0033         DC    /0033   C         8B934760
    OF44 0 2624         DC    /2624   OM        8B934770
    OF45 0 2723         DC    /2723   PL        8B934780
    OF46 0 3513         DC    /3513   ET        8B934790
    OF47 0 3500         DC    /3500   E         8B934800
    OF48 0 0000         DC    /0000             8B934810
                    *                           8B934820
    OF49 0 2729   MSG16 DC    /2729   PR        8B934830
    OF4A 0 2637         DC    /2637   OG        8B934840
    OF4B 0 2931         DC    /2931   RA        8B934850
    OF4C 0 2400         DC    /2400   M         8B934860
    OF4D 0 3326         DC    /3326   CO        8B934870
    OF4E 0 2427         DC    /2427   MP        8B934880
    OF4F 0 2335         DC    /2335   LE        8B934890
    OF50 0 1335         DC    /1335   TE        8B934900
                    *                           8B934910
    OF52   0120         END   BEGN              8B934920
    ND STATEMENTS FLAGGED IN THE ABOVE ASSEMBLY
```

| `ATE | 01JUL66 | 01NOV66 | 15MAY67 | 01SEP67 | 01OCT67 | 14NOV69 | 30JAN70 | PROG ID | 08B9-2 |
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| `ATE | 01JUL66 | 01NOV66 | 15MAY67 | 01SEP67 | 01OCT67 | 14NOV69 | 30JAN70 | PROG ID | 08B9-2 |
| cC NU. | 415178 | 415233 | 411731 | 411857 | 411875 | 431319 | 431319A | PAGE | 26A |

ACTI	02ED	0147	02FA	031F	070A	0759							
ADRS	0660	0629											
ADRS1	0C38	09ED	0A39	0C0E									
ADRS2	0C39	0A5A											
ARIA1	01E1	0106	01D7	01DD									
ARIA2	025C	024B	024E	0251	0254	0257							
ARIA3	0281	0270	0273	0276	0279	027C							
ARIA4	02CB	02BB	02BE	02C1	02C4	02C7							
ARIA5	01F8	01E6	01E9	01EC	01EF	01F2							
AVG	0D30	0428	0C80	0D3C									
A000	0780												
A001	0789												
A002	0973												
A003	09BF												
A004	0BD3												
A007	0D5D												
BAK	01D2	01DC											
BEGAC	01CB	0157											
BEGAD	0203	01CD	0209										
BEGAE	020F	01CF											
BEGAF	0213	01F5	020E										
BEGAG	022B	0236											
BEGAI	0291	021A											
BEGAJ	02A2	02A9											
BEGAK	02D5	0249	025A	0268	027F	0288	0290	0296	02B9	02CA			
BEGAM	0269	0216											
BEGAN	0151	0156											
BEGAP	013D	0138	02D8										
BEGAR	023C	0244											
BEGAS	02AB	02B3											
BEGBA	013F	0142											
BEGIN	014F	02D5	06FB	074D									
BEGN	012D	0F52											
BEGN1	0132	012D											
BEGN2	0133	0137											
BEGX3	014E	013E											
BEGX4	02D8	0143											
BEGX5	02DA	0307											
BEGX7	02DC	0308											
BEGX8	0158	0151											
BSP	07C9	07D4	0C50	0CAA	0CD0	0D7C							
BSPI2	07E2	07DF											
BSPI3	07E8	07E4											
BSPX1	07E0	07D6											
BSP2	07D2	07CA	07CF	07E7									
BSP3	07CB	07CC											
BSP4	07D6	07D1											
BSP6	07DD												
BY	0BBE	0BB4											
CKERR	08C0												
CKHLT	08CA	08C4											
CKHLW	0BA0	0B1B	0B2E	0B48	0B59	0B5B							
CN1	0909	090D	093E	0978									
CN2	0910	0914	09C5	09CC	0A68	0CA6							
CODE	05DA	03EF	0406	05D1	05D5								
CODEH	060E	0293	05B0	05F1									
COM00	08D6	08E4	08EA										
COM01	08DD												
CON	066D	0153	0203	0206	022C	0233	0239	02A3	02A6	090F			
CONV	066A	020F											
CONV0	05D9	05B3	05B5	05B8	05BA	05BC							
CONV1	066B	020A											
CON1	0671	023C	023F	0241	02AB	02AE	02B0	0916					
CVTBL	05DC	05AC											
C000	076E												
C001	0765												
DCC	0373	0375	0378	0379	047B	0798	07DB	0800					
DCC2	0384	0374											

DCC3	038A	0383	0386										
DELAY	038C	038D	039A	039C	0A16	0A24	0C57						
DIND	03A2	03A3	0811										
DLYC	0C36	09EB	0A20	0A31	0A3E								
DLY1	0C33	0A14	0A18										
DLY2	0C35	0A22	0A26										
DR9	04E4	04E0	04E3										
DST	06E0	02F1	02FB	0327	0335	06EB	06EC	06ED	06F1	073E	079A	07DD	0802	082C
		08B9	0921	0A27	0ADC	0AF4	0B6C	0BC5	0C4E	0C60			
DSW	036A	031E	0320	0321	0322	0324	0325						
DSWSP	0330												
DSWX1	081D	0809	0832										
DSW0	0807	06F7	0749	07CB	07F1	081B							
DSW1	0813	080D											
DSW2	0814	080F											
DSW5	0809												
DSW7	0810	0819											
DSW8	0816	0810											
EDIT	02E4	0134	0149	01CB	0213	0245	0269	0291	02B6	02F9	0319	0473	04DE	04E7
		04F0	05A0	0702	0705	0745	0751	0754	0792	086A	0D4B	0D4E	
END	0662	078B	07EE										
ERR	0D32	0D08											
ERRI	036F	032C											
ERR1	0D38	0D19											
ERR2	0D3B	0D24											
E001	0D6D												
E003	07EC												
E004	07B5												
E005	096C												
E006	0988												
E007	0D29												
E008	0D74												
FNC	03AE	03A7											
FORM0	0869	0863											
FORM1	08D1	0864											
FORM2	08D9	0865											
FORM3	08DF	0866											
FORM4	08E5	0867											
FORM5	08EB	0868											
FWD1	0287	026F											
FWD2	02D1	02B7											
FWRD	0262	0247											
GPHLM	06DB	01F3	0223	0226	0228	0258	0266	026D	027D	028A	029F	02D3	0AE8	0AEE
GRL1	086A	09DA	0B77	0BC8	0BF1								
HALT	03B2	03BC	0666	0716	08CD								
HEDEC	05A6	03ED	0404	05D6									
HEDE1	05B0	05C6											
HEDE2	05B4	05BE											
HEDE3	05BF	0586											
HEDE4	05C8	05A7											
HEDE5	05CA	05A8											
HEDE6	05CC	05A9											
HERE	0436	0420	0432										
HERE1	0428	0424											
HERE2	042F	042B											
HEXCD	060C	0416	049E	04A7	04B4	04BE	04CA	05FB	05FF				
HEXCV	05E6	0414	049C	04A5	04B2	04BC	04C8	0604					
HEXC1	05ED	05EE	05F7										
HEXC2	0600	05E8											
HEXC3	0602	05E7											
HEXWD	0606	0412	049A	04A3	04B0	04BA	04C6	05EA					
HEX00	0607	05F3	05F8	05FA	05FC	05FE							
HI	0D2F	042F	0C7E	0D39									
H0205	0525	04FA											
H023B	0527	04F6											
H0400	0526	04FD											
H2020	0529	0503											
ILSW	0366	0316	0337										

2400 TIMING TEST

```
INPSE   06DF  0221 029D 0884 08A8
INTR    082A  07A8 0820
INTRR   031E  031A
INTRT   081F  0822 0B25 0827 0945 094A 0970 098C 0A0D 0A65 0C66 0C96 0CB4
INTR2   0829  0824 082E
INTR3   0312  02EE
IOA     0E9C  06EE 072B 0838 0CA2
IOARA   065E  063C 0645 0647 065A
IOCC1   03B0  03AA 03AB
JDLY2   0391  0399
JDLY3   0398  0393
JDLY4   039A  0396
KBSC    0C2E  0A50
KDASH   0C41  0B0B 0B14
K000E   0B00  0BC2
K0010   0C3B  0A57
K0020   0465  0425 042C 0433
K006    0464  041E
K007    0463  03E5 0B06
K0086   0C3A  09F0 0A36
K0200   0525  0500
K0300   0524  04ED
K0700   0522  04E2
K0900   0523  04E4
K2121   0661  0634
K8000   0D31  0D32 0D38 0D3B
LDLFA   0C49  0C4C
LDLFB   0C4E  0C5F
LDLFC   0C57  0C5B
LDLFE   0C69  0C47
LDLFT   0C46  0C2E 0C6B
LDLFX   0C6F  0C55 0C59
LDLFY   0C5C  0C56
LDSP    0EC9  0844 0EF7
LDSP1   0EE2  0ECC 0EF2
LDSP2   0EF5  0ED4 0ED8
LDSP3   0EE6  0ED1
LDSP4   0EF1  0EEF
LDSP5   0EDC  0E0F
LINE    0C42  09FB 0AF2 0AF8 0B04 0BE7
LNSW    0B9E  090E 0B61 0B64 0BCA 0BE8
LN3     0E40  0511
LN3A    0E50  04EE
LN3B    0E51  04E5
LN3C    0E5A  04F8 0501 0505
LN3D    0E58  050F
LOADK   0C19  0516 0AD3 0B00 0BBF 0C1F
LOADV   0C21  0513 0AD9 0BAB 0BAF 0BB8 0BBC 0C2C
LOAD1   0C1B  0C1E
LOG     061E  0561 0658
LOGAB   047E  0466
LOGAC   0466  0439 045D
LOGAO   046C  046B
LOGAE   0480  04B3
LOGAF   04B8  04BB
LOGBC   052A  043B 045F
LOGC    03BF  044A 0454 08B5
LOGCA   0556  053B
LOGCB   055C
LOGCC   0561  0539
LOGC1   0534  0560
LOGC2   053A  0555
LOGC3   053F  053E
LOGC4   0548  0547 0556 0559
LOGC5   054A  0543 0558
LOGC6   055A  054E
LOGC7   0563  03C0 052C
LOGC8   0565  03C2 052D
```

2400 TIMING TEST

```
LOGC9   0567  03C4 052E
LOGD0   0499  03D4
LOGIC   03CC  03CF
LOGV1   03E0  03DE
LOGV2   03EA  03F8 03FC
LOGX3   05A0  047D
LOGX8   05A4  05A1
LOGX9   05A5  05A2
LOGO1   063A  062A 0635 064B 0650 0651
LOGO2   0654  0630
LOGO3   064B  0644
LOGO4   062C  062B 0632 0637 0639 064F
LOGO5   0637  0653
LOG2C   03D6  04D1
LOG3C   03FE  03E7 040F
LOG4C   0408  0418
LOG5C   0411  03FF
LOG6C   0419  03DF 03FD 0410
LOG7C   0444  044D 0490 0569
LOG8C   0446  044E
LOG9C   0448  044F
LDW     0D2E  0421 0C7C 0D33
LOX00   056B  052B 054C 0550 055E
LOX02   056C  0535 053A 0544 0552 0554
LOX03   056D  054F 055B
LOX04   056E  0541 0557
MD1LM   06DA  0237
MD3     04ED  04E9 04EC
MK15    043E  03B3 0476 061F
MK27    0440  03B5 0477 0621
MLG     083C  0761 076A 077C 0785 07B1 07E8 0846 08BB 08C5 08C7 0968 096F 09B4
              09BB 0BCF 0D25 0D59 0D69 0D70 0ECA 0ECD 0ECF 0E02
MLGE    08C5  08CF
MLGX0   0901  084C 085A 08AF
MLGX1   0902  087C 08A1 08B2
MLGX2   0903
MLGX3   0904
MLGX4   0905
MLGX7   060C  01DE 020C 0211 0872 0896
MLGX8   0906
MLGX9   0907  0886 08AA
MLG0A   08BB  08C9
MLG00   085F  085E
MLG02   0863  0861
MLG03   086A  08D8 08F5
MLG04   08B5
MLG05   08B7  084E
MLG06   08B9
MLG07   08AF  087F 088C 08A3 08DE
MLG10   086F  0879
MLG11   088D  086D
MLG12   088E  089E
MLG15   08A5  08AE
MLG16   0881  088B
MLG18   08C7  0842
MO00    08F7  03C6 03D0 0451 0467 08B4
MO000   08F0  0870 0876 0882 0888 088F 089B 08A6 08AB 08D2 08DA 08E0 08E6 08F0
MOD01   08FE  08D4 08E2 08E8 08ED
MOD02   08FF  08D6 08F3
MDD03   0900
MOD1    08F8  08BF 080C
MDD1S   06D0  021F
MOD2    08F9  0858
MOD2S   060E  029B
MOD3    08FA  0852
MOD4    08FB  0849 08C0
MOO5    08FC  0854
MONE    039E  0391
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```
MDNR1  0771  0734 073B 0961 09AA 0C13 0D2B
MDNT   02EF  014C 0668
MDNTC  073D  0715 0784
MDNTD  070C  075E 0777
MDNTE  0761  074C
MDNTF  0720  071B
MDNT1  02F1  02F4
MDNT4  06F0  0300
MDNT6  071C  07B7
MDNT7  072C  0720
MDNT8  0728  072B
MDNT9  0734  072E 0732 073C
MDNX0  075F  0708 0757
MDN10  071E
MDN11  076A  06FA
MDN22  0718  0710
MDN23  0716  070F
MDN24  0785  0714
MDN25  0711  06F6 0744 0747 0769 0770 0783
MSG1   0EF9  0D28 0D5C 0D6C 0D73
MSG10  0F31  0BD1
MSG11  0F35  0D27 0D5B 0D6B 0D72
MSG13  0F39  07EA
MSG14  0F3D  07B3
MSG15  0F41  077F
MSG16  0F49  0788
MSG2   0F01  07B4 07EB
MSG3   0F09  096B 0972 09B7 09BE
MSG4   0F11  0BD2
MSG5   0F19  0763 076C
MSG6   0F1D  077E 0787
MSG7   0F21  096A 0971
MSG8   0F25  09B6 09BD
MSG9   0F29  0EEA
MST    03A0  0392 0398
MTAAA  0B36  0B3B
MTAAB  0B53  0B4A
MTAAC  0B50  0B55
MTAAD  0B56  0B52
MTTX1  0925  071E 093C 0976 0B8E 0C82 0D77
MTTX3  0926  093D 0942 094F 0977 0982 098F 0997 09C3 09CA 09D0 09FD 0A4A 0A4C
             0A52 0AAA 0AAC 0AB2 0B8C 0B90 0BE5 0C72
MTTX6  0927  0726
MTTX9  0928  093F 097A 0A09 0C62 0C92 0CD2
MTTYA  0934
MTTYB  092D  0AA7
MTTYC  092E  08E5 09D4 0A83 0A85 0AB5 0AB9 0BEB
MTTYD  0930  03E8 08E7 09D6 0A8A 0A8C 0BED
MTTYE  0932  08E9 09D8 0A99 0A9B 0BEF
MTTYF  0936  0B94 0B97
MTTY4  0929  0835
MTTY5  092A  0AA1
MTTY8  092B  07AB
MTTY9  092C  0989 0A61 0CB0
MTTZ0  0938  0AB7
MTTZ1  0939  0A01 0A05 0BD5 0BD9 0C00 0C04
MTT01  093C  0735
MTT02  0976  0736
MTT03  09C2  0737
MTT04  09C9  0738
MTT05  09CF  0739
MTT07  0C71  073A
MT1X0  0679  021D 0231 0299 0965 09AE
MT101  093F  09C7
MT102  094A  0944
MT103  0961  096E 0975
MT104  0968  0957 095B
MT105  0963  0951
```

```
MT107  096F  0960
MT108  0954  0967
MT200  097A  09CE
MT201  09AC  099A
MT202  099D  0980
MT203  09B1  0984
MT204  09B4  09A0 09A4
MT205  0988  09A9
MT206  09AA  09BA 09C1
MT208  0989  09B3
MT209  0995  0992
MT5Q6  0C30  09F3 0A47 0C08
MT5Q7  0A1C  09F5 0A1B 0A49 0A5F 0C09
MT5XA  0675  024C 024F 0252 0255 0262 0264 0271 0274 0277 027A 028C 028E 02B4
             02BC 028F 02C2 02C5 02C8 02D1 0ADE 0AE2
MT5XE  0C43  0939 0AE0 0AE4 0AE6 0AEA 0AEC 0AF0 0B27 0B3E 0B44
MT5XF  0C45  0A4E 0AAE 0ACA
MT5X0  067A  01E7 01EA 01ED 01F0 0A2F 0C38 0C39
MT5X2  0C3C  0AFE
MT5X3  0C3D  09F6 0A43 0C0B
MT5X4  0C3E  09FF 0A9D 0A9F 0AA5 0BFB
MT5X8  0C3F  0831 0839
MT5X9  0C40  0B4B 0B53
MT50A  0A2F  09EF 0A3B 0A5C 0C0F
MT50B  0B75  0B72
MT50C  0B83
MT50D  0A68  0AA4 0AB1
MT50F  0A8E  0A95 0AA9
MT502  0A10  0A35 0A51
MT503  0A19
MT505  0A24
MT506  06D7  09E9 0A3C
MT508  0A27
MT509  0A2D  09F2 0A33 0A38 0A59 0A60
MT51A  0B3C  0B29
MT51B  0B59  0B25 0B38 0B41 0B47
MT51C  0B88  0B63
MT51D  0B27  0A03 0A07 0B96 0B99 0BD7 0BDB 0C02 0C06
MT51E  0B2E  0936
MT51F  0B39  0B30
MT510  0C24  0C22 0C29
MT516  0AE6  0B9C
MT517  0B08  0AFC 0B00 0B03 0B08
MT518  0B73  0B6F
MT519  0B23  0B60
MT520  0BC3  0AD0
MT521  08C5  0AC3
MT522  0C15  0C98
MT523  0C17
MT524  0A85  0ABC
MT525  0AC7  0AC2 0ACF
MT526  0879  09DC 0B67 0B7F 0BCB 0BF3
MT540  06A5  0A12
MT562  0BA9  0892
MT572  0B70
MT573  09E1  09E4
MT580  0AC3  0AC1
MT581  0BDD
MT582  0C13  08E3
MT583  0A61  0A56 0C11
MT584  0B9C  0B8B
MT585  0BF7  0BFA
MT590  0A57  0A42
MT591  06B1  0C53
MT6X8  0C70  0C88
MT7XA  0D8C  0C9F
MT7XC  0D8D
MT7XE  0D8E  0D1C
```

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2400 TIMING TEST

```
MT7X0   0D84   022E 0874 0892 0899 0C8E
MT7X1   0D85   0C90 0CFB
MT7X2   0D86   0C86 0CC3 0CD9 0D79
MT7X3   0D87   0C74 0CCB 0CDF 0CE7 0CED 0CF1 0CF7
MT7X4   0D88   0C76 0CFF 0D36 0D48
MT7X5   0D89   08EB 0C78 0CE3 0CE5 0D1A 0D20 0D46 0D47
MT7X6   0D8A   0C7A 0CDD 0D01 0D10 0D40
MT7X7   0D8B   0C84 0CBD 0D42
MT7Y0   0D8F   0CE1
MT7Y1   0D90   08EE 0C89 0CE9 0CEF 0D03 0D05 0D0A 0D0C 0D56
MT7Y2   0D91   08F1 0C8C 0CF3 0CF9 0D0E 0D12 0D17 0D18
MT70B   0CD2
MT70F   0CDD   0CCF
MT700   0C8E
MT702   0CA8
MT703   0CA9   0CAF 0CDC
MT704   0CAC   0CA9
MT705   0CD0   0CCE
MT710   0CC6   0CC5
MT711   0D3E   0CC1
MT712   0D2B   0D5F 0D6F 0D76
MT713   0CC3   0CBF 0D43
MT714   0D45   0D21
MT715   0D20   0D1E
MT716   0D70   0D3D 0D4A
MT718   0D77   0CFD
MT719   0C92   0D82
MT730   0D2D   09E5 0BCC 0BFC
MT744   0CFE
MT745   0D7E   0D7B
MT746   0D7B   0D81
MT750   0CF1   0CEC
MT751   0CFB   0CF6
MT754   0D0E   0D37
MT755   0D1A   0D14 0D3A
MT760   0D52   0D4D 0D60 0D62
MT761   0D60   0D50
MT762   0D63   0D54
MT763   0D69   0D57
NOTE    0DEA   0BB6
NOTE1   0E31   0764 076D 0BBA
NTDSH   0AFE   0B0A
ONE     036E   0217 0323 04B5 08BD 0B19 0D34
OPARA   05E1   05AA 05CE 05D0 05D2 05D4
PART2   01E6   01E0
PCC0    044C   0453 0518 0AD5 0B81 0BC1 0C2A 0EF3
PCCX1   0461   0450 0AFA
PGCM    073C   073C 0775
PGSW    093B   02F7 0711 0767 077A
PID     02DE   0856
PRA     0D96   03C8 04A0 04A9 04AC 04B6 04C0 04C3 04CC 04CF 0B17 0B34 0B36 084E
               0B50 0EE4 0EEC
PRA1    0D94   0B12 0B75 0B86
PRA3    0D93   0B10 0B7D 0B84 0C1B 0C26 0EE8
PRA4    0D92   03CC 0426 042D 0434 0458 0470 0530 0532 05A3 062C 063A 0660 0B1F
               0EDC
PRDWT   0830   083A 0940 097B 098A 0A0B 0A63 0C64 0C94 0CB2 0CD4
PRO2    0587   0570 0572
PRSP    059F   052F
PRSW    0B9F   09E7 0B65 0B68 0BCE 0BFE
PRWC    0491   046E
PRO0    0573   056E
PRO1    057E   056F
PRO3    0594   0571
PR3     0DB2   0AD7 0BA9
PR4     0DCE   0BAD
PR6     0BA1   0B70
PR7     0BA5   0B73
```

2400 TIMING TEST

```
PR8     0E06   0B7B
RAD     02E0   0488 0730
RDSWS   0306   02FF 030D 0771 083D
RID     02DF   02F6 03E3 041C 04AE 0700 071C 0721 075C 0773 0850 087A 089F
RST     04D3   051C 06FD 074F
RSTX2   051E   04D9
RSTX3   0520   04DA
RST1    04DA   04DD
RST2    04DE   04D7
RTN1X   090F   090A
RTN2X   0916   0911
RWD     07F0   0723 0778 07FE 0987 09B1 0A54 0BDD
RWDX0   0804   0709 07F2
RWDX1   0805   07F4
RWD2    07FE   07FB
RWD3    07F1   07F8 0803
RWD4    0800   07FD
SENSE   065C   0623 063E
SNSPR   0442   0472 0475 0478 0480 0484 0487 0488
SNWC    07BA   079B
SNWC1   07BB   0794
SPEC    066C   01D3 01D9 0B1D
STCN    0917   090C 0913 0923
STCN1   0919   090B 0912 0920
STCN2   091F   091D
STCN3   0921   091E
SVE     051A   0507
SVEXT   0359   0352
SVINT   0332   014E 031C 0359
SVIN0   033E   034E 0357
SVIN1   0340   0348
SVIO    0364   0333 0344 0345 0358
SV0     035B   034C
SV1     035C   033E
SV2     035D   033C
SV3     035E   0353
SV4     035F   033B 0340 0349 034B 0356
SV5     0360   033F 0342 0346
SV6     0361   033D 0343 0354
SV7     0362   0338 034F
SW      0462   03E1 03F4 03F6 09F8 0A40 0A45 0C0C
SW0     02E1   02DA 0436 045A 04D4 0663 06F3 070C 0740 083F 08CA 095C 09A5 0ABD
               0BB1 0BDF 0ED5
SW1     02E2   02DC 0309 030C 0718
SYDR    050D   0509
SYDR1   050F   050C
TAAQ    0368   0311 0315
TADSW   036C   0326 0329 032D
TADWC   036D   032A
TAX1    030F   0314 031D 032F
TERM    02E3   0334 0419 0456 0536 062E
TERR    0371   0317
TMIC    0500   04F2 04FF
TMICA   04FD   04F4
TMICB   0505   04FC
TMRDT   07C0   07C4 0993 0995 0A6A 0A6C 0A72 0A74 0A7A 0C17 0CB7 0CB9 0CBB 0CD6
TMRD1   0790   07C3
TMRD4   07C4   098E 0A67 0CB6
TMRX2   07C7   079D
TMRX3   07C8   07C1
TMWRT   078D   07AF 07C5 0948 094D 0980 0985 0A10 0A19 0A1E 0A29 0A2B 0C15 0C49
               0C99 0C9B 0C9D 0CA4
TMWR0   07A5   0795 079F
TMWR1   079A
TMWR2   079B   07A3
TMWR3   07A1
TMWR4   07AA   07C6 0947 094C 097F 0A0F 0C68
TMWR6   07B1   07AE
```

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```
            TMWR7  07B7
            TMWR8  07AF
            TMWR9  079F  078F 07C2
            TOTA   0E69  092D 09E1 0A70 0A78 0A7E 0A80 0A87 0A8E 0A90 0A96 0AC7 0ACC 0B23
                         0B2C 0B3C 0B42 0B57 0BF7
            TRK9   0B04  0AF6
            TURA1  06D9  021B
            TURA2  06D8  0297
            TWRX0  07BC  0797 07A1 0952 0963 099B 09AC 0A6E 0A76 0A7C 0CC8 0D3E
            TWRX1  07BD  0790
            TWRX2  07BE
            TWRX3  07BF  078E
            UNMK3  0302  02FD 03B8 048C 0654
            UNMK4  0304  02FE 03BA 048E 0656
            WAITA  0372  300A
            WAIT1  014B  3001
            WAIT2  03B7  3002
            WAIT3  047A  3003
            WAIT4  0626  3004
            WAIT5  07A7  3005
            WAIT6  07DE  3006
            WAIT9  0370  3009
            WC     03BE  03DB 03DC 03FA 040D
            WDCON  05E5  03EB 0402 05AE
            WORD   05D8  05AF 05B4 05B9 05C0
            WRDSW  065F  0628 0642 0648 064D
            WRITE  065A  063D
            XIOSN  063E  0641
            XIOWR  063D  064A
            END OF ASSEMBLY
```

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TABLE OF CONTENTS

1. PURPOSE

    THE MAGNETIC TAPE TIMING TEST (MTTIM) IS DESIGNED TO TEST WRITE AND READ
    DELAY, INTER-RECORD GAP, CREEP AND ERASE HEAD ON THE 2400 MAGNETIC TAPE
    UNIT SERIES FOR COMPLIANCE WITH THE PRODUCT SPECIFICATIONS.
    THE PROGRAM IS ABLE TO TEST,

    1.   SYSTEMS WITH ONE OR TWO TAPE DRIVES.
    2.   DRIVES WITH 9 TRACK OR 7 TRACK READ-WRITE HEADS.
    3.   MODELS 1, 2, OR 3 WITH 2 OR 4 USEC STORAGE.

    IF SYSTEM HAS TWO DRIVES, BOTH DRIVES MAY BE SEQUENTIALLY TESTED IN ONE
    CONTINUOUS RUN OF THE PROGRAM.

2. PREREQUISITES

    THIS PROGRAM ASSUMES THAT THE 2400 MAGNETIC TAPE FUNCTION TEST RUNS AND NO
    TAPE CONTROL ERRORS EXIST. EQUIPMENT REQUIRED CONSISTS OF,

    1.   1442 CARD READ/PUNCH OR 1054 PAPER TAPE READER.
    2.   1053 OR 1816 TYPEWRITER, OR 1443 PRINTER.
            A. IF 1443 IS USED - A CARRIAGE TAPE WITH AT LEAST CHANNEL 1 PUNCHED
                SHOULD BE USED.
    3.   1800 PROCESSOR CONTROLLER.
    4.   ONE OR TWO 2400 SERIES MAGNETIC TAPE DRIVES.
    5.   THIS PROGRAM REQUIRES THE RELOCATABLE DIAGNOSTIC LOADER.

---

3. USE PROCEDURE

    3.1   PROGRAM LOADING

    3.1.1   ON TAPE DRIVE(S) TO BE TESTED,

            1. LOAD TAPE REEL.
            2. DEPRESS LOAD-REWIND KEY.
            3. DEPRESS START KEY. AFTER TAPE REWINDS TO LOAD POINT, DRIVE(S)
                SHOULD BECOME READY.

    3.1.2   REFER TO RELOCATABLE DIAGNOSTIC LOADER DOCUMENTATION FOR LOADING
            PROCEDURE.

    3.1.3   IF OPTIONS ARE DESIRED, GO TO 3.2.2.

            IF NO OPTIONS ARE DESIRED, GO TO 3.2.1.

    3.2   OPERATION

    3.2.1   TYPICAL OPERATING PROCEDURE

            IF NO OPTIONS ARE SET THE PROGRAM ASSUMES,

            1. BOTH DRIVES ARE TO BE RUN.
            2. OUTPUT DEVICE IS TO BE 1053/1816 TYPEWRITER.

            TO EXECUTE PROGRAM DEPRESS THE START BUTTON.

    3.2.2   OPERATING OPTIONS

            IF OPTIONS ARE DESIRED, SET SWITCHES DESIRED FROM TABLES 1 AND 2 AND
            DEPRESS THE START BUTTON.

                        TABLE 1 GENERAL CONTROL

            1. SWITCHES MAY BE SET PRIOR TO PROGRAM
                LOADING OR AT WAIT 1.
            2. SWITCHES 0-1 MAY BE CHANGED ONLY
                BY A RESET-START OPERATION.
            3. SWITCHES 5-15 MAY BE CHANGED ANYTIME.

```
***********************************************************************
*           DATA ENTRY SWITCHES          * DESCRIPTION                *
* 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15                               *
* . .         . . . .       .     .  . 1..HALT BEFORE EACH ROUTINE    *
* . .         . . . .       .     1.....HALT ON ERROR                 *
* . .         . . . .       .  1........BYPASS ALL PRINTOUTS EXCEPT GRAPH *
* . .         . . . .    1...............LOOP PROGRAM                 *
* . .         . . . 1...................USE 1443 AS OUTPUT DEVICE     *
* . .         . . 1.....................LOOP RTN5 IN READ, AFTER INITIAL WRITE*
* . .         . 1.......................BYPASS PRINTING RTN 5 GRAPH   *
* . .         1.........................REQUEST RTNS 1-4 TO PRINT TIME FOUND *
* . .  1................................BYPASS ALL HEADING PRINTOUTS  *
* . 1...................................DO NOT RUN DRIVE 1            *
* 1.....................................DO NOT RUN DRIVE 0            *
*                                                                     *
* NOTE 1 - DELAY TIMES ALWAYS PRINT IF TIME IS OUTSIDE ALLOWABLE LIMITS. *
* NOTE 2 - IF DRIVE 1 IS EDITED AS NOT AVAILABLE - SWITCH 1 IS NOT USED. *
*                                                                     *
***********************************************************************
```

                        TABLE 2 LOOP ROUTINE

    1. THESE SWITCHES CAN BE CHANGED AT ANY TIME.
    2. IF ZERO IS ENTERED, THE PROGRAM WILL NOT LOOP BUT WILL RUN ALL ROUTINES IN
        SEQUENCE.
    3. IF IT IS DESIRED TO START ON A ROUTINE OTHER THAN ROUTINE 1, AND CONTINUE

THE TEST FROM THAT POINT,

A.   SET STARTING ROUTINE PER TABLE 2.
B.   START PROGRAM.
C.   WHILE PROGRAM IS RUNNING SELECT ROUTINE ZERO.
D.   PROGRAM WILL COMPLETE THE SELECTED ROUTINE AND THEN RUN THE REMAINING
     ROUTINES IN THEIR NORMAL SEQUENCE.

```
**********************************************************************
* PROGRAM SWITCHES               * DESCRIPTION                       *
*   5 6 7                                                            *
*   X X X........................ENTER A ROUTINE NUMBER FROM 0 TO 7. *
*                                                                    *
**********************************************************************
```

3.3   TERMINATING PROCEDURE

      1.   THE PROGRAM WILL TERMINATE WHEN ALL DRIVES WHICH ARE SELECTED
           HAVE BEEN TESTED.

      2.   THE PROGRAM WILL TERMINATE IF ERROR PRINTOUT E003 OCCURS.
           (SEE SEC. 4.3)

3.4   RESTART PROCEDURE

      PRESS THE STOP, RESET AND START BUTTONS. THE PROGRAM SHOULD GO TO
      WAIT 1. IF THIS DOES NOT OCCUR, THE PROGRAM MUST BE RELOADED.

3.5   PROGRAM HALTS

      PROGRAM WAITS ARE USED IN THIS PROGRAM, AND ARE IDENTIFIED BY
      REFERENCING THE B REG AND I REG.

      A PROGRAM WAIT IS OF THE FORM,

            30XX, (B REG).

      A DESCRIPTION OF THE INDIVIDUAL PROGRAM WAITS CAN BE FOUND AT THE
      BEGINNING OF THE PROGRAM LISTING. A TYPICAL WAIT DESCRIPTION FOLLOWS.
      IT IS INCLUDED TO SHOW THE FORMAT OF THE LISTING, AND IT IS NOT
      NECESSARILY A DESCRIPTION OF AN ACTUAL WAIT.

```
**********************************************************************
3001 0 014C        OC     WAIT1+1     WAIT FOR DATA ENTRY
                     *                 SWITCHES TO BE SET.
                     *                 PUSH START TO
                     *                 CONTINUE THE PROGRAM.
**********************************************************************
```

      B REG, (FIRST 4 DIGIT GROUP) CORRESPONDS TO B REG READING.

      I REG, (SECOND 4 DIGIT GROUP) CORRESPONDS TO I REG READING.

4.   PRINTOUTS
     PID AND MID AS SEEN IN DESCRIPTIONS BELOW WILL NOT BE FOUND IN PRINTED HEADI
     INSTEAD, A DESCRIPTION OF THE MESSAGE WILL BE PRINTED.

     4.1   COMMAND MESSAGES

PID MID RID RAD UNIT
                NO.
B900 C000 XXXX XXXX 000X
                DRIVE 0 IS NOT READY

B900 C001 XXXX XXXX 000X
                DRIVE 1 IS NOT READY

     4.2   INFORMATION PRINTOUTS

PID MID RID RAD UNIT
                NO.
B900 A000 000B XXXX 000X
                ALL ROUTINES ARE COMPLETE

B900 A001 000B XXXX 000X
                PROGRAM IS COMPLETE.

```
                           MIN  TIME MAX
                           LIM  FND  LIM
B900 A002 XXXX XXXX 000X XXXX XXXX XXXX
          WRITE DELAY TIMING, PRINTED IF BIT  6 OF DATA ENTRY SWITCHES IS ON. (
          IF RID IS 0001-TIME FND IS FOR A WRITE WHEN AT LOAD POINT.
          IF RID IS 0003-TIME FND IS FOR A WRITE WHEN NOT AT LOAD POINT.

                           MIN  TIME MAX
                           LIM  FND  LIM
B900 A003 XXXX XXXX 000X XXXX XXXX XXXX
          READ DELAY TIMING, PRINTED IF BIT  6 OF DATA ENTRY SWITCHES IS ON. (M
          IF RID IS 0002-TIME FND IS FOR A READ WHEN AT LOAD POINT.
          IF RID IS 0004-TIME FND IS FOR A READ WHEN NOT AT LOAD POINT.

                            10
                           MSEC VAR  MIN
                           AVG  AVG  AVG
B900 A004 0005 XXXX 000X XXXX XXXX XXXX
          INTERRECORD GAP AVERAGES FOUND BY ROUTINE 5.  (INCHES)

                           MIN  AVG  MAX
                           CREEP CREEP CREEP
                           FND        FND
B900 A007 0006 XXXX 000X XXXX XXXX XXXX
          FORWARD CREEP FOUND.  (INCHES).
```

     4.3   ERROR PRINTOUTS

PID MID RID RAD UNIT MIN   AVG   MAX
                NO. CREEP CREEP CREEP
                     FND   FND
B900 E001 0006 XXXX 000X XXXX XXXX XXXX
          CREEP WAS LESS THAN .05 (INCHES).

                           DSW
                           RECEIVED
B900 E003 XXXX XXXX 000X XXXX
          DSW WRONG AFTER BACKSPACE, PUSH START TO RESTART PROGRAM.

                           DSW
                           RECEIVED

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B900 E004 XXXX XXXX 000X XXXX
            TEST ABORTED DUE TO DSW OR UNEXPECTED INTERRUPT.
            IF DSW IS-FFFF-INTERRUPT OCCURRED ON A LEVEL OR ILSW
            BIT OTHER THAN THAT EDITED FOR MAGNETIC TAPE.

                            MIN TIME MAX
                            LIM FND   LIM
B900 E005 XXXX XXXX 000X XXXX XXXX XXXX
            WRITE DELAY TIMING ERROR. (MSEC)
            IF RID IS 0001-ERROR IS FOR A WRITE WHEN AT LOAD POINT.
            IF RID IS 0003-ERROR IS FOR A WRITE WHEN NOT AT LOAD POINT.

                            MIN TIME MAX
                            LIM FND   LIM
B900 E006 XXXX XXXX 000X XXXX XXXX XXXX
            READ DELAY TIMING ERROR. (MSEC)
            IF RID IS 0002-ERROR IS FOR A READ WHEN AT LOAD POINT.
            IF RID IS 0004-ERROR IS FOR A READ WHEN NOT AT LOAD POINT.

                            MIN   AVG   MAX
                            CREEP CREEP CREEP
                            FND   FND
B900 E007 0006 XXXX 000X XXXX 0000 XXXX
            CREEP WAS ZERO. (INCHES).
            NOTE   ANY NEGATIVE CREEP VALUE IS PRECEEDED BY A MINUS SIGN.

                            MIN   AVG   MAX
                            CREEP CREEP CREEP
                            FND   FND
B900 E008 0006 XXXX 000X XXXX XXXX XXXX
            CREEP WAS NEGATIVE. (INCHES)
            NOTE   EACH NEGATIVE CREEP VALUE IS PRECEEDED BY A MINUS SIGN.

                            NOTE

                PROGRAM ID, ROUTINE NUMBER, ROUTINE ADDRESS, MESSAGE ID, UNIT
                NUMBER AND DSW ARE ALWAYS PRINTED IN HEXADECIMAL. ALL
                OTHER WORDS OF ANY MESSAGE ARE PRINTED IN DECIMAL. ON
                DECIMAL PRINTOUTS, ASSUME A DECIMAL POINT AS SHOWN BELOW.
                WHERE PRINTOUT IS IN INCHES   XX.XX
                WHERE PRINTOUTS ARE IN TIME   MODEL 3   MODEL I AND 2
                                                XX.XX   XXX.X

                IN ADDITION TO THE ABOVE PRINTOUTS, ROUTINE 5 PRINTS A PLOT
                OF RECORD GAP VS WRITE GO DOWN TIME.

---

5. COMMENTS

    A.   MTTIM CONSISTS OF A MAGNETIC TAPE TIMING MONITOR ROUTINE, A SERIES OF
          COMMON MAGNETIC TAPE SUBROUTINES, AND A SERIES OF TESTS. SECTION 5.B
          GIVES A DESCRIPTION OF EACH OF THE COMMON SUBROUTINES AND THEIR
          CALLING SEQUENCES. SECTION 5.C GIVES A DESCRIPTION OF EACH OF THE
          TEST ROUTINES.

          THERE IS ONE TABLE AROUND WHICH ALL ROUTINES ARE ORIENTED. THIS
          TABLE IS THE DEVICE STATUS TABLE, CALLED DST. INDEX REGISTER I
          ALWAYS CONTAINS THE NUMBER OF THE TAPE DRIVE BEING USED AND INDEX
          REGISTER 2, THE BASE ADDRESS OF THE DST TABLE. THE DST TABLE IS THE
          BASIC MEANS OF COMMUNICATION BETWEEN ROUTINES.

    B.   COMMON SUBROUTINES

          EACH SUBROUTINE ASSUMES THAT INDEX REGISTER 1 CONTAINS THE UNIT
          IDENTIFICATION AND INDEX REGISTER 2 CONTAINS THE BASE ADDRESS OF THE
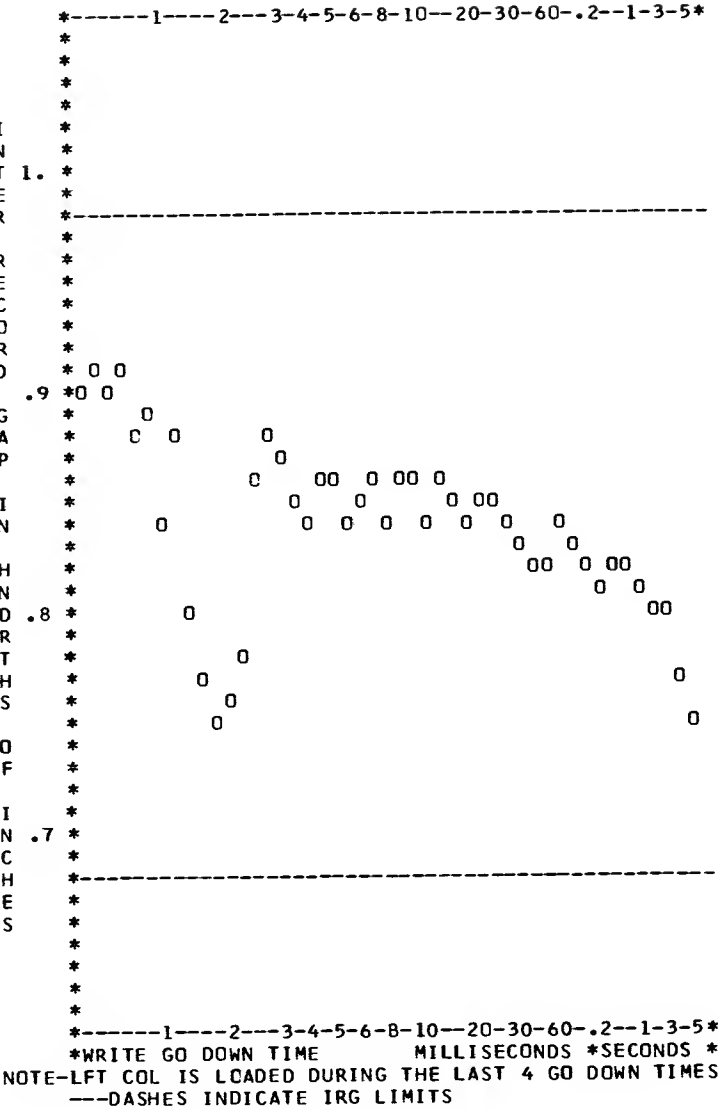   DST TABLE.

CALL   NAME

BSI L   BSP
          USE- BACKSPACE ONE RECORD.

BSI L   DCC
DC   ADRS. OF CALL STRING
          USE- BUILD THE PROPER IOCC WORDS FROM THE CALL STRING AND ISSUE THE XIO
               COMMAND.

BSI L   DELAY
DC   NUMBER OF LOOPS.
          USE- DELAY 25 USEC FOR EACH LOOP SPECIFIED.

BSI L   DIND
DC   ADRS. OF AREA CODE
DC   ADRS. OF MODIFIER
          USE- BUILD THE PROPER IOCC WORDS AND SENSE THE DEVICE.

BSI   L DSWO
          USE- CALLS ON SUBROUTINE DIND AND RETURNS WITH THE DSW STORED IN THE
               DSW TABLE AND IN THE A REGISTER.

BSI   L HALT
          USE- MASKS ALL INTERRUPT LEVELS AND WAITS FOR OPERATOR ACTION.

BSI   L INTRT
DC   RETURN ADDRESS
          USE- SAVES FOR USE AFTER THE NEXT INTERRUPT THE RETURN ADDRESS
               SPECIFIED IN THE CONSTANT.

BSI   L LOG
          USE- DETERMINE THE DESIRED OUTPUT DEVICE, CONVERT AND PRINT THE MESSAGE
               CODE SET UP BY SUBROUTINE MLG.

BSI   L MLG
DC   ADRS. OF LEFT HALF OF HEADING
DC   ADRS. OF RIGHT HALF OF HEADING
DC   MESSAGE ID
DC   LINE AND FORMAT NUMBER.
          USE-1. SETS UP THE HEADING TO BE PRINTED AND CALLS ON PCCO.
              2. SETS UP THE MESSAGE TO BE PRINTED AND CALLS ON LOG.

BSI   L PCCO
          USE- DETERMINES THE DESIRED OUTPUT DEVICE AND PRINTS A PRESET MESSAGE
               WITH NO CONVERSION.

BSI   L RWD

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USE- REWINDS THE DRIVE SPECIFIED BY XR1.

8SI   L   TMRDT
      USE- READS THE UNIT SPECIFIED BY XR1 AND TIMES THE LENGTH OF TIME TO A
           CHANGE IN THE WORD COUNTER.

BSI   L   TMWRT
      USE- WRITES ON THE UNIT SPECIFIED BY XR1 AND TIMES THE LENGTH OF TIME
           UNTIL THE WORD COUNTER HAS CHANGED TWICE.

   C.   TEST ROUTINES

   RTN. NO.   DESCRIPTION

   1 THRU 4   THESE ROUTINES TIME READ AND WRITE DELAYS AND CHECK FOR TIME
               BEING WITHIN LIMITS. IF TIME IS OUTSIDE LIMITS AN ERROR PRINTOUT
               IS GIVEN. TIME WHICH IS WITHIN LIMITS IS PRINTED ONLY IF
               REQUESTED. (SEE TABLE 1)

      1   WRITE DELAY AT LOAD POINT.

      2   READ DELAY AT LOAD POINT.

      3   WRITE DELAY NOT AT LOAD POINT.

      4   READ DELAY NOT AT LOAD POINT.

      5   INTERRECORD GAP TEST

               THIS ROUTINE WRITES A SERIES OF RECORDS WITH CONTROLLED GO LINE
               DOWN TIME BETWEEN RECORDS. THE SEQUENCE IS --

               A.   WRITE A RECORD
               B.   DELAY 10 MILLISECONDS
               C.   WRITE A RECORD
               D.   LOAD THE LEFT COLUMN IF NEXT VARIABLE DELAY IS 2.0,3.0,4.0, OR
                    5.0 SECONDS.
               E.   WRITE A RECORD
               F.   DELAY A VARIABLE TIME (0.5MILLISECONDS TO 5 SECONDS)
               G.   WRITE A RECORD
               H.   WRITE A RECORD

               THE ABOVE SERIES IS REPEATED 47 TIMES WITH THE VARIABLE DELAY
               INCREASING EACH TIME.

               WHEN VARIABLE DELAY REACHES 5 SECONDS, THE SERIES IS RESTARTED FOR
               A TOTAL OF FIVE PASSES.

               THE TAPE IS THEN REWOUND AND ALL RECORDS READ AND ALL GAPS
               CHECKED FOR LENGTH.

               A GRAPH OF INTERRECORD GAP VERSUS VARIABLE GO LINE DOWN TIME IS
               THEN PRINTED. A SUMMARY IS ALSO PRINTED SHOWING AVERAGE GAP
               LENGTH WITH 10 MILLISECONDS DELAY, VARIABLE DELAY AND NO DELAY.

      6   WRITE-BACKSPACE-WRITE CREEP TEST.

               THIS ROUTINE CHECKS FOR TAPE CREEP BY WRITING SEVERAL RECORDS,
               BACKSPACING OVER THE LAST RECORD WRITTEN AND REWRITING IT. THE
               LENGTH OF THE RESULTING GAP IS THEN CHECKED AND COMPARED TO THE
               ORIGINAL GAP.

TYPICAL 7 TRACK GRAPH

DATE   28FE866   01JUL66   04NOV66   15MAY67   01SEP67   010CT67   14NOV69   PROG ID   08B9-*
EC NO. 415120   415178   415233   411731   411857   411B75   431319   PAGE   4

DATE   28FEB66   01JUL66   04NOV66   15MAY67   01SEP67   010CT67   14NOV69   PROG ID   08B9-*
EC NO. 415120   415178   415233   411731   411857   411B75   431319   PAGE   4A

```
               *------1----2---3-4-5-6-8-10--20-30-60-.2--1-3-5*
               *EE E EE E
               *  O  O  O O
               *
               *     O
    I          *
    N          *
    T  .8 *------------0------------------------------------
    E          *
    R          *        O
               *         O  O
    R          *         OO
    E          *              O     C
    C          *           O 00000 000
    O          *                      OO    OO O
    R          *                       000  C O   O
    D          *        O                        00 O
    G   .7 *                                        O
    A          *       O
    P          *        O
               *
    I          *
    N          *
               *
    H          *
    N   .6 *
    O          *
    R          *
    T          *
    H          *
    S          *
               *
    O          *
    F          *
               *
    I          *
    N   .5 *-------------------------------------------------
    C          *
    H          *
    E          *
    S          *
               *
               *
               *
               *------1----2---3-4-5-6-8-10--20-30-60-.2--1-3-5*
               *WRITE GO DOWN TIME       MILLISECONDS *SECONDS *
         NOTE-LFT COL IS LOADED DURING THE LAST 4 GO DOWN TIMES
              ---DASHES INDICATE IRG LIMITS
```

                    MISADJUSTED 9 TRACK DRIVE

                 NOTE-POINTS PLOTTED AS E ARE OUTSIDE
                      THE GRAPH LIMIT.

-- LAST PAGE --

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6 APPENDIX

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2400 TIMING

6.1 EDIT PROCEDURE

THE FOLLOWING EDIT PROCEDURE IS FOR CARD INPUT. THE EDIT PROCEDURE FOR PAPER TAPE INPUT IS LOCATED IN THE PAPER TAPE EDIT UTILITY PROGRAM DOCUMENTATION. THE PROPER EDIT CARDS MUST BE THE LAST CARDS IN THIS PROGRAM DECK. THE FOLLOWING FORMS ARE PROVIDED TO AID IN MANUALLY PREPARING THESE EDIT CARDS OR UPDATING EXISTING EDIT CARDS. IF IT IS NECESSARY TO PREPARE OR MODIFY EDIT CARDS, FILL IN THE NECESSARY DATA IN THE FORMS PRIOR TO PUNCHING THE CARDS. CARD COLUMNS THAT ARE SHADED SHOULD BE LEFT BLANK.

THE LAST EDIT CARD IS THE "END EDIT CARD." THE INFORMATION IN THIS CARD INCLUDES:

CARD 0 MUST CONTAIN ALL SEVEN ENTRIES. REFERENCE THE COLUMN HEADING FOR THE NECESSARY ENTRIES.

1. AN "E" IN COLUMN 1.
2. THE PID FOR THIS PROGRAM (COL 2-3).
3. A TERMINATOR WORD OF "FFFF" (COL. 7-10).

Column headings (left to right):

- PROGRAM ID
- CARD SEQUENCE NUMBER
- NUMBER OF EDIT ENTRIES
- ILSW BIT FOR TAPES EXAMPLE: BIT 0 = 8000 BIT 1 = 4000 ETC.
- INTERRUPT ADDRS. FOR TAPE (HEX) EXAMPLE: LEVEL 7 WOULD BE 0012
- NUMBER OF TRACKS DRIVE 0 0000 = 9 TRACK 0001 = 7 TRACK
- NO. OF TRACKS DR 1. 0000 = 9 TRACK 0001 = 7 TRACK FFFF = NO DRIVE 1 ON SYSTEM.
- DRIVE 0 MODEL. 0000 = MODEL 3 0001 = MODEL 1 0002 = MODEL 2
- DRIVE 1 MODEL. 0000 = MODEL 3 OR NO DRIVE 1 ON SYS. 0001 = MODEL 1 0002 = MODEL 2
- CORE STORAGE SPEED 0000=2.00 MICRO SEC 8000=2.25 MICRO SEC 0001=4.00 MICRO SEC

COLUMN	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	26	31	35	41	45	51	56	61	66	71
CARD 0	E	B	9	0	0		E	D	0	0		0	0	0	7																
END	E	B	9	0	0		F	F	F	F																					